

# 1. The Portuguese programme one laptop per child: Political, educational and social impact

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## **ABSTRACT**

In 2008, the XVII Portuguese Constitutional Government launched the 'e.escolinha' programme, within the Technological Plan for Education, which set out the distribution of a computer, called 'Magalhães', designed for children attending the 1st cycle of basic education. Suspended in 2011 by the XIX Government, this programme has allowed, however, almost 500 000 children to have access to a personal computer. It was expected that this political measure would "revolutionise" the national education system by bringing changes to the pedagogical practices of teachers and the learning processes of children and by achieving educational success, in general. Based on documental analysis and on a set of interviews with key decision-makers in conceiving, implementing and monitoring this governmental initiative, the first part of this chapter presents and analyses the 'e.escolinha' initiative and the policies behind that governmental programme, seeking to disassemble those objectives and provide some insights into the relationship between discourses, rhetoric, and reality. After that, the chapter focuses on children's uses and practices with

the ‘Magalhães’ laptop, at school and at home. Based on the results of questionnaires filled in by approximately 1500 children from 32 First Cycle public schools of the municipality of Braga (north of Portugal) and also from questionnaires applied to their parents and teachers, this chapter intends to analyse the real impact of this initiative for children, family and school. It also seeks to discuss the contribution of this educational policy to children’s digital literacy and also to their own and their families’ social and digital inclusion. To understand if it represented an added value to teachers’ pedagogical practice is another of its aims. The findings point out a major focus on technology and access rather than on uses and competences or even on social, educational and cultural change. In fact, a major conclusion is the existence of a strong gap between the policy and the practices, typical of a top-down policy design.

This study is an integrant part of a research project titled “Navigating with ‘Magalhães’: Study on the Impact of Digital Media in Schoolchildren” conducted at the University of Minho, Portugal, financed by the Portuguese Foundation for Science and Technology [PTDC/CCI-COM/101381/2008] and co-funded by the European Regional Development Fund [COMPETE: FCOMP-01-0124-FEDER-009056].

**Keywords:** *one laptop per child, ICT, education, digital literacy, social inclusion.*

## **1. INTRODUCTION: THE TECHNOLOGICAL PLAN FOR EDUCATION AND THE ‘E.ESCOLINHA’ PROGRAMME**

Since the launch of the MINERVA project in 1985, there have been no more than ten major projects, programmes and initiatives to introduce technology in education in Portugal (Pereira, 2013, p. 110). Most of these have been under the aegis of the Ministry of Education, currently merged with the former Ministry of Science, Technology and Higher Education, both of which have always played an important role in the programmes connected with technological development (idem, p. 11).

In September 2007, the Technological Plan for Education (PTE) was published in the Official State Gazette (First Series, no. 180, 18 September 2007). It was put forward by the XVII Constitutional Government headed by then Prime Minister, José Socrates, and approved by the Presidency of the Council of Ministers on 16 August 2007 (Council of Ministers Resolution no. 137/2007). The document laid

down the plan to modernise schools and teaching, and its main goal was to “place Portugal among the five most advanced European countries in terms of schools’ technological modernisation by 2010” (Resolution of Council of Ministers, 2007). To that end, the PTE set out to create the necessary conditions to equip students and teachers with the basic tools to enable learning and training in information and communication technologies by providing access to equipment and digital content and restructuring school infrastructures (Melro, 2011, p. 40). The school is thus understood to be the centre of educational modernisation:

It is essential to value and modernise schools, to create the physical conditions that favour educational success among students, and reinforce the role of information and communication technologies (ICT) as basic tools for teaching and learning in this new era. (Resolution of the Council of Ministers no. 137/2007).

Following the guidelines established for the technological modernisation of schools since the Lisbon Strategy in 2000, the objectives of the PTE were, among others, to supply schools with computers, develop contents and ensure ICT training for teachers (Pereira & Melro, 2012, p. 302). Based on these principles, the PTE was structured around three main axes of operation: technology, contents and training. Projects to be implemented were allocated to each of these axes taking into account efficiency factors and financing agents. Among the projects were the ‘*e.escola*’ [‘e.school’], ‘*e.escolinha*’ [‘e.little school’], ‘*e.professor*’ [‘e.teacher’], ‘*e.opportunidades*’ [‘e.opportunities’], ‘*Internet na sala de aula*’ [‘Internet in the classroom’], and ‘*academias TIC*’ [‘ICT academies’]. However, both the ‘*e.escola*’ and the ‘*e.escolinha* school’ programmes, which made provision for the distribution of laptops to students from the 1st grade up to the 12th, were launched under the aegis of the Ministry of Public Works, Transportation and Telecommunications (MOPTC) within the Technological Plan and were later to be adopted by the Ministry of Education (under Maria de Lurdes Rodrigues and, later, Isabel Alçada) through the Technological Plan for Education within the scope of the Technology axis.

The ‘*e.escolinha*’ initiative and the ‘Magalhães’ computer were officially presented by the Prime Minister at the time, José Socrates, on 30 July 2008 at the Pavilhão Atlântico in Lisbon. The programme made

provision for the free (or at a reduced cost) distribution of laptops with educational contents to 1st cycle school students. The presentation of the computer coincided with the signing of the memorandum of understanding between the Portuguese government and Intel, the manufacturer of ClassmatePC, regarding the production of the 'Magalhães' computers in Portugal, as well as with the consortium set up by the government with JP Sá Couto, the company certified to assemble Intel's Classmate in a plant in Matosinhos (Northern Portugal) run by the siblings Jorge e João Paulo Sá Couto (Melro, 2011, p. 41). At the presentation ceremony, José Socrates called the 'Magalhães' the first laptop for children made in Portugal with its name being a tribute to the Portuguese navigator Fernão de Magalhães [Ferdinand Magellan], the first man to complete a circumnavigation of the Earth, in the 16th century.

The government stated publicly that the 'e.escolinha' was an extension of the 'e.escola' programme that had been in operation for a year. Nevertheless, while the 'e.escola' enabled 2nd and 3rd cycle (5th to 9th grade) and secondary education (10th to 12th grade) students to purchase a laptop at a low cost through a contract with a broadband Internet supplier, the 'e.escolinha' provided 1st cycle students (1st to 4th grade) with a computer either free of charge or by paying 20 to 50 euros depending on their status with the School Social Services. The Internet connection was optional in the 'e.escolinha' programme unlike the 'e.escola'. Besides this, in the 'e.escola' students could choose the make of the computer whereas in the 'e.escolinha' students only had access to 'Magalhães', a laptop which was equipped with educational contents for the 1st cycle of education and had a sturdy structure especially suited for children (anti-shock and water resistant).

At the same time, agreements were made with other companies, namely with content producers Microsoft, Linux, Caixa Mágica and Inforlândia; the distributor Prológica; and the mobile telecom operators, Vodafone, TMN, Optimus and ZON, which had investment obligations arising from the previous *Fundo para Sociedade da Informação* (FSI)[Information Society Fund] which was later converted into the *Fundação para as Comunicações Móveis* (FCM)[Foundation for Mobile Communications], presided by Mário Lino, which ran the 'e.escola' and 'e.escolinha' programmes.

In September 2008, Prime Minister José Sócrates announced the distribution of 500,000 laptops for the beginning of that school year, reinforcing to the media the inclusive nature of computers in schools: “we want the computer to be part of the school supplies in every school” (*Jornal de Notícias*, 29 July 2009). For José Sócrates, the importance of children’s access to the ‘Magalhães’ computer was strongly linked to the economic development of the country:

This new generation will be better prepared and will be able to contribute more towards the modernisation and development of Portugal. Besides this, with the ‘Magalhães’ initiative, many homes will have a computer for the first time, contributing strongly, as well, to overcome info-exclusion in general. (Fernandes, 2008).

In this speech, publicised in a report released by Microsoft (Fernandes, 2008), it is possible to highlight three aspects underlying the ideology of the initiative: the democratisation of access to new technologies (equal opportunities, info-inclusion and family access); the use of technology in the classrooms (equating computers to school supplies); preparing citizens for the future (economic competitiveness of the markets).

Specifically, in the Technological Plan for Education, the ‘e.escolinha’ initiative was defined as the strategy to ensure 1st cycle students had access to personal computers with educational contents (Tribunal de Contas, 2012, p. 97). To that end, it had to meet two main targets: generalise computer and Internet use in early learning and ensure thousands of families had access to a computer (*ibid.*). Including families in the implementation process of ‘e.escolinha’ was also a central feature of the measure, on the premise that the ‘Magalhães’ would be the first computer to enter the home of many Portuguese families.

Despite the fascination conjured by the presentation or perhaps because of it, the opposition parties raised questions immediately, namely regarding not only the direct awarding of contracts to JP Sá Couto (for the ‘Magalhães’ computer) and to the content producers, but also the management of public funds by the Foundation for Mobile Communications. In December 2009, a Temporary Parliamentary Committee of Inquiry (CIP) was appointed to look into the Government’s actions regarding the abovementioned Foundation. In June 2010, the

Committee concluded that there was a “serious lack of transparency in the public management of the Foundation and the programmes and initiatives it operates” (CIP, 2010) and that the contracts made with the hardware and software manufacturing companies had eluded the need for a public tender thereby distorting the laws of market competition. In light of the Committee’s findings, it was recommended that the government abolish the Foundation, that the management and coordination of the initiatives be awarded to the Ministry of Education (CIP, 2010) and that open technologies and free software be adopted (ibid.).

After the decision of the Committee, the government launched a public tender for the manufacturing of the ‘Magalhães’, having JP Sá Couto been selected once again, this time to produce a further 250,000 computers for two more school years. Together with the initial 500,000 (2008/2009), this meant 750,000 computers were ordered in the three-year duration of the programme (2008/2009, 2009/2010, 2010/2011). By December 2009, 401,711 computers had been distributed within the framework of ‘e.escolinha’ (Tribunal de Contas, 2010, p. 46), with costs of approximately 85.6 million euros (idem, p. 48). As for the second stage, in November 2010, according to the Audit Court Report (Tribunal de Contas, 2012) on the Education Statistics and Planning Office (GPE), among the projects being implemented within the scope of the Technological Plan for Education ‘e.escolinha’ was the one with the lowest implementation rate (37,6%). Of the 250,000 computers only 94,091 were distributed (Tribunal de Contas, 2012, p. 8) while 59.8 million euros were spent (16.12% of the total investment in e.initiatives) (Tribunal de Contas, 2012, p. 34). Nevertheless, at the time of publication it was not yet possible to know the implementation figures for the final school year (2010/2011) and it is thought that almost all the 250,000 computers allotted to the second phase were distributed. This cannot be absolutely ascertained, however, since to date no new report has been published by the Audit Court on the matter.

Given the period during which the ‘e.escolinha’ initiative was drawn up and the problems involved in its implementation in schools, the ‘Magalhães’ computer obtained significant coverage in the media (Melro, 2011; Pereira & Pereira, 2013), which, in turn, also impacted on the social systems in the education field and on society as a whole.

## 2. THE ‘NAVIGATING WITH MAGALHÃES’ PROJECT: OBJECTIVES, METHODS AND SAMPLE

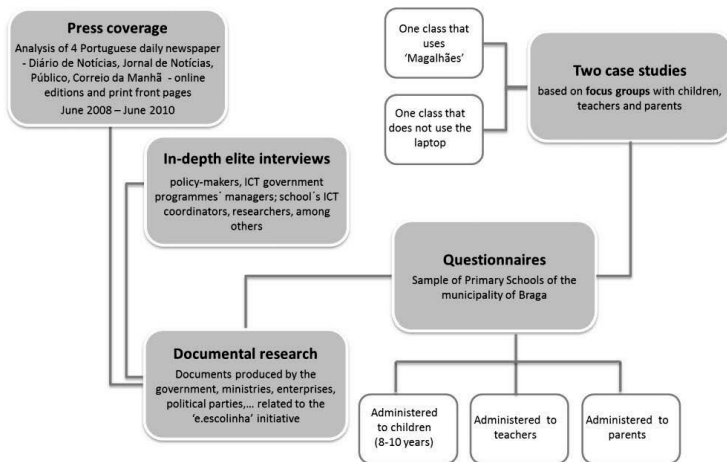
When the ‘e.escolinha’ programme was announced by the Portuguese government in 2008 it was expected, taking into account the manner in which it was presented and the objectives that were set, that it could have a significant impact on Portuguese society in social, educational and economic terms. It was on the basis of this assumption that the “Navigating with ‘Magalhães’: Study on the Impact of Digital Media in School Children” project was set up. It was developed by a team of researchers of the Communication and Society Research Centre at the University of Minho<sup>1</sup> with funding from the *Fundação para a Ciência e a Tecnologia* [Foundation for Science and Technology] and carried out between May 2010 and May 2013. It is based on the assumption that delivering computers to school children does not automatically lead to knowledge and learning. Digital technology offers an important potential for education but, in our view, the use of technology in this context is merely instrumental. Government policies can contribute to bringing new practices into schools, but are these policies coherent? Are they meaningful in the everyday school and classroom contexts? It has been argued that technology is more effective than traditional methods in terms of involving and stimulating children in the learning processes. But can we consider that technology motivates learners by itself? Can the technology itself make all the difference? How can we rethink the schools’ role in the age of digital culture?

The main focuses of this study were the policies of the Technological Plan for Education, especially those of the ‘e.escolinha’ programme, and the uses and practices that children make with the ‘Magalhães’ computer, and the resources behind it, both at school and outside it. We sought to understand the perspectives of children, teachers and parents about the potential, the opportunities and also the challenges of that governmental initiative.

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1 The team consisted of: Sara Pereira (Coordinator), Helena Sousa, Luís Pereira, Ana Melro (research grant holder) and Andreia Lobo (research grant holder between June and August 2011). Scientific Advisors: José Manuel Pérez Tornero, Universidade Autònoma de Barcelona; Évelyne Bévoort, Centre de Liaison de l’Enseignement et des Médias d’Information (CLEMI); Manuel Pinto, University of Minho.

In order to meet these objectives, the methodological design of the study comprised a variety of research methods which can be seen in Figure 1.



**Figure 1:** Methodological design of the study

In this chapter, we will report on the results obtained through the in-depth elite interviews as well as on the results deriving from the questionnaires administered to the children, their teachers and their parents.

## 2.1. In-depth elite interviews

Within the scope of the project, twenty-two interviews were conducted with key-players in the design and implementation of the 'e.escolinha' programme<sup>2</sup>, namely: government officials (6), political parties (4), business-

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 2 The interviews were conducted between June 2011 and February 2012.



es (4), trade unions, associations (6) experts on ICT in education (2) (Table 1). With this series of interviews, we sought to become acquainted in more detail with: the political, educational and social assumptions which gave rise to this governmental measure; the concepts of child, school and learning held by those responsible for devising the programme; and the views on technology which justified and legitimised the measure.

Once transcribed, the interviews were processed and analysed using the qualitative analysis programme NVivo. The analysis grid comprised four main topics: 1) Design, implementation and objectives; 2) Results, appraisal and evaluation of the implementation (negative aspects and positive aspects); 3) The future/continuance (obstacles and possibilities); and 4) Perspectives / conceptions (competences, media literacy, the child, school, family, computer)

**TABLE 1: Key players interviewed and their posts.**

GROUP	INTERVIEWEES	POST*
<b>Government</b>	Maria de Lurdes Rodrigues	Minister of Education, XVII Constitutional Government (March 2005 to October 2009)
	Isabel Alçada	Minister of Education, XVIII Constitutional Government (October 2009 to June 2011)
	Nuno Crato	Minister of Education and Science, XIX Constitutional Government (since June 2011)
	Carlos Zorrinho	National Coordinator of the Lisbon Strategy and the Technological Plan from 2005 to 2009; State Secretary for Energy and Innovation XVIII Constitutional Government (until June 2011).
	Paulo Campos	Assistant State Secretary for Public Works and Communications, XVII and XVIII Constitutional Governments.
	José Vítor Pedroso	Coordinator of the Educational Resources and Technologies Team (ERTE) of the Ministry of Education.
<b>Businesses</b>	Jorge Sá Couto	JP Sá Couto
	Rui Grilo	Assistant-coordinator of the Technological Plan and Head of the Education area at Microsoft.
	Adelaide Franco	Microsoft Education
	Paulo Trezentos	Caixa Mágica

(\*) Post held at the time the initiative was devised or implemented.

<b>Trade Unions Associations and Foundations</b>	Mário Nogueira	Secretary-General of FENPROF – National Federation of Teachers
	João Dias da Silva	Secretary-General of FNE – National Federation of Education
	João Grancho	President of ANP, National Teachers' Association, until September 2011; currently the State Secretary for Basic and Secondary Education
	Albino Almeida	President of CONFAP – National Confederation of Parents' Associations
	Mário Franco	President of the Mobile Communications Foundation
	Luís Amaral	Member of the APDSI (Association for the Promotion and Development of the Information Society) High Level Group
<b>Political Parties</b>	Hélder Amaral	Member of Parliament for CDS-PP
	Emídio Guerreiro	Member of Parliament for PSD e member of the Education, Science and Culture Parliamentary Committee
	Bruno Dias	Member of Parliament for PCP
	Pedro Soares	Member of Parliament for BE
<b>Experts</b>	Roberto Carneiro	Coordinator of the Observatory for the Technological Plan for Education (Minister of Education, XI Constitutional Government)
	Maria do Carmo Leitão	1st cycle teacher at Escola Básica Várzea de Abrunhais, Lamego; winner of the Innovative Teachers Prize 2009, awarded by Microsoft and of the National Teachers' Prize, in the innovation category, awarded by the Ministry of Education.

## 2.2. The questionnaires: listening to children, parents and teachers

As far as the questionnaires were the concerned, the goal was to listen to the opinions of children attending the 3rd and 4th grades<sup>3</sup>, as well as to those voiced by their teachers and parents. The sample was collected from among the 1st cycle schools in the municipality of Braga, which is also where the institution carrying out the research is located. It was considered appropriate to study and analyse the social,

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 3 The Portuguese Educational System currently provides for 12 years compulsory education (Law no. 85/2009 of 27 August). There are five cycles of study: pre-school (optional), 1st cycle of basic education (1st, 2nd, 3rd and 4th grades); 2nd cycle of basic education (5th and 6th grades); 3rd cycle of basic education (7th, 8th and 9th grades); secondary education (10th, 11th and 12th grades). Based on data published in the report "Educação em Números" [Education in Numbers] by the General Directorate for Statistics on Education and Science (DGEEC, 2012), the mean of the distribution of the number of students, in Portugal, by level of schooling in the three years the 'e.escolinha' programme was in operation (2008/2009, 2009/2010, and 2010/2011) was as follows: 13.8% in pre-school, 23.9% in the 1st cycle, 13.7% in the 2nd cycle, 24.9% in the 3rd cycle and 23.7% in secondary education. The 1st cycle of basic education consists of 4 schooling levels (grades) with children aged between 6 and 10 and the distribution of the students per level is of approximately 25% for each of the levels. (DGEEC, 2011; GEPE, 2009; GEPE, 2010).

educational and geographical context of the area in which the project was carried out.

The sample was selected from the population comprising the 3rd and 4th grade students attending the 1st cycle schools in the municipality of Braga. Information pertaining to school clusters, the geographical locations and the different grades (school years) were cross-referenced and a matrix drawn up so as to ensure that schools from all the clusters were represented in the final sample<sup>4</sup>. In each cell of the matrix, a school was randomly selected through a simple random sampling process. All 3rd and 4th grade students of the selected schools were surveyed<sup>5</sup>. The sample size was determined considering a 95% confidence level and a 2% margin of error.

A total of 32 schools (out of the existing 72) participated in the study, with the final sample consisting of 1517 3rd and 4th grade students (out of a population of 3584), 79 teachers<sup>6</sup> and 1264 parents and guardians<sup>7</sup>.

The Computer programme IBM-SPSS Statistics v21 was used to conduct the statistical analysis of the data collected from the 'Children', 'Teachers' and 'Parents' questionnaires. The descriptive analysis of the data was carried out taking into account the nature of the variables being studied. The following measures were calculated: absolute frequencies; relative frequencies (percentage of valid cases –%); central tendency (mean); dispersion (standard deviation); and the maximum and minimum values. In the multiple choice questions, the percentages of answers presented are in relation to the total number of valid cases. For the inferential analysis we resorted to the application of non-parametric tests since, on the whole, the conditions of applicability of parametric tests were not met. To compare independent or unconnected groups the Mann-Whitney and Kruskal-Wallis tests were used, whenever there were two groups to be compared, respectively. If significant differences

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4 At the time of the study, the education area of the municipality of Braga consisted of 13 school clusters. Of these only two were unwilling to participate in the study.

5 Bearing in mind the possibility that some parents would refuse to take part, a list of alternative schools was drawn up based on stratified random sampling.

6 In total 80 questionnaires were collected but one was not considered for this analysis.

7 The questionnaires were administered in May and June 2012. Parent questionnaires were given to the children to take home, where they were filled in.

were detected, they were identified by a pair-by-pair comparison using the Mann-Whitney test. To check the independence between two categorical variables, Chi-square tests were used (Marôco, 2011). All the tests were applied with a confidence level of 95% unless otherwise stated.

The main results of the study are discussed in the following sections. Taking into account the amount of data collected from the questionnaires administered to the children, parents and families and the impossibility of describing it all in this chapter, we decided to select the topics which best reflect the objectives we set out to achieve in this text: to become acquainted with and analyse the impact and the significance of the initiative that involved the distribution and delivery of the 'Magalhães' computer and to compare them with the objectives stated when this governmental programme was devised and implemented <sup>8</sup>.

### **2.3. Characterisation of student, parent and teacher samples**

As mentioned before, the study was conducted in 1st cycle schools (1st cycle of basic education) in the municipality of Braga, which is situated in the North of Portugal. It has a resident population of 181,494, including 29,667 children aged between 0 and 14, which accounts for 16.3% of the population. The study involved 50 of the 62 parishes which make up the municipality. The majority (33) are predominantly urban while the remaining 17 are in moderately urbanised areas<sup>9</sup>.

As regards the sample of children, of the 1517 surveyed, 49% are female and 51% male. The vast majority are aged between 8 and 10. In terms of the school level, it is a balanced sample: 48% attend the 3rd grade and 52% the 4th grade. Most of the children come from a middle class background as indicated by the data they provided on their parents' level of education and professions. Approximately 30% completed basic education while around 20% finished secondary education. As far as higher education is concerned, 24% of the mothers have a degree

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<sup>8</sup> This study has been examined in other publications. Presentation and discussion of other data may be found in Pereira, 2014; Pereira, 2013; Pereira & Pereira, 2013; Pereira & Melro, 2012, among other publications.

<sup>9</sup> According to the Typology of Urban Areas (TIPAU) of the National Institute of Statistics (INE), 2009. This variable was not used in the data analysis because it was not regarded as significant.

compared to 18% of the fathers. Regarding the fathers' professions, 18% hold a high level position (executives, directors, managers, and experts in intellectual and scientific fields), 30% have intermediate level occupations (administrative and service-industry workers) and 42% work in industry, construction and agriculture. The remaining 10% include unskilled workers (3, 5%), those who are unemployed (6%), pensioners and students. As for the mothers, 23% hold a high level position, 35% have an intermediate level job and 14% work in industry, construction and agriculture. The unemployment rate is higher among the mothers (13%) as is the percentage of unskilled workers (11%). Three percent are domestic workers and a minute number are pensioners and students.

It is a group of children who enjoy spending their free time using the media but who also spend time on other activities. When asked about what they did in their free time, as first preference, 34% reported social and fun activities such as playing, being and going out with their family, being and playing with friends. In second place were sports activities and in third the media (watching TV, playing videogames, watching films, etc.). Given the range of activities, we may conclude that they are children who use and enjoy using the media but are not glued to the screens and show an interest in a wide range of activities. It is true though that at their age playing and being with friends face-to-face (and not online) is very typical and much appreciated while the relationship with the media loses ground to this type of activities.

As far as the parents are concerned, 93% of the 1264 surveyed are aged between 30 and 50. Forty-five percent completed basic education, 28% secondary education while 27% have a degree. Regarding their professions, 24% hold high-level positions, 37% have intermediate level posts (administrative and service-industry workers) and 15% work in industry, construction and agriculture. The percentage of unskilled workers is approximately 5%, which is also the percentage of those who are domestic workers. The unemployed make up 12% of the sample, which was similar to the national unemployment rate at the time the questionnaires were administered. The remainder are either pensioners or students.

With regard to the teachers (79), the overwhelming majority are female (94%), so the percentage of male teachers is not significant. The age range is between 28 and 59 with the mean age being 47. In terms of years of service, it varies between 6 and 36 years and the mean is 24 years of teaching service. Forty-seven percent of those surveyed teach 3rd grade and an equal number teach 4th grade. Six percent teach classes that have students of both grades.

### **3. VIEWS ON THE STRATEGIES (AT THE BASIS) OF THE 'MAGALHÃES' INITIATIVE**

This section seeks to decode the policies of the 'e.escolinha' programme, namely as regards its objectives, implementation and evaluation, from the point of view of the interviewees as provided in the interviews conducted for the purpose of this research (Table 1).

#### **3.1. Design and objectives**

The 'Magalhães' initiative outlasted two Ministers of Education. Maria de Lurdes Rodrigues was the minister at the time the measure was designed and implemented. She was later replaced, half-way through the government's term of office, by Isabel Alçada. Finally, with the change in government and a new minister, Nuno Crato, it was discontinued.

According to the Minister of Education of the government that designed and implemented this measure, the various initiatives launched sought to "improve conditions in terms of access and usage of information and communication technologies". In her interview, Maria de Lurdes Rodrigues states,

What we were able to do was to link the concerns about the development of the information society to educational policies. I think it is the first time that we have realised that the essential part of the development of the information society has to involve the school; it entails improving students access to technology (Maria de Lurdes Rodrigues, interview)

This idea of linking the development of the information society to educational policies is more readily apparent in the words of two other

members of the same government. For Paulo Campos, Assistant State Secretary for Public Works and Communications, “the programme was not devised to increase the number of computers in schools but rather to extend the use of broadband throughout society”. According to Carlos Zorrinho, who was responsible for the government’s technological strategy, both the ‘e.escola’ and the ‘e.escolinha’ were a way to “break a barrier that consisted in the fact that there was a very high Internet usage in Portugal, but basically in only 40% of the households”.

Although the former Minister of Education, Maria de Lurdes Rodrigues, seeks to underline the leading role taken on by school and education within the programmes for the development of the information society, and her successor, Isabel Alçada, supports the idea that the ‘Magalhães’ was at the service of improved learning, the fact is that tension is visible between a view that is more centred on learning and another focused on tackling the low generalization of Internet access in Portuguese households.

For Roberto Carneiro, it is clear that the ‘e.escolinha’ draws inspiration from the One Laptop per Child (OLPC) project. Nevertheless, those involved in devising the programme do not acknowledge that connection, stating, in contrast, that it was originally devised and thought through within the political context that led to the formation of the XVII government.

Paulo Campos explains how the need for such an initiative arose:

The idea for ‘e.escola’- and the ‘Magalhães’ computer derives from this programme- came up in 2005, in the first days of government, in a way due to the fact that we were curious enough to look up some statistics that turned out not to match what we were saying about the poor competition in the market in Portugal, which led to high broadband prices and low penetration as a result.

We ascertained that this reasoning was not entirely correct. Going through the statistics in more detail we established that in households with computers we had higher penetration rates than the European Union average. What we had was low computer penetration per household, so what was preventing the development of broadband was essentially the inexistence of a computer in each house rather than the conditions the market had on offer for broadband access. That is why this programme is devised much more with a slant towards communication than towards

education since our analysis revealed that it was a problem that was more closely associated to communication issues. In other words, how can we increase broadband penetration in Portugal? And we established that the issue of the computer was an essential one.

The characteristics of the programme took into account the commitment we had to addressing a shortcoming that consisted in the fact that our society was not connected to the Internet as other societies with higher penetration rates were. The enabling vehicle for that purpose would be the children as through them it would be easier to encourage new behaviours in families that offer some resistance to this type of issue. (Paulo Campos, interview)

Mário Franco, who would become President of the Foundation for Mobile Communications (an institution whose key responsibilities included, for example the management of the funds allocated to this initiative), states that he played an important role in devising the policies which gave rise to the 'e.escola' and the 'e.escolinha' and explains the ingredients at the basis of these programmes: the importance of the issue of mobility, the benefits for the information society, the development of the economic aspect.

I always believed that mobility was an asset. On other hand, there were benefits for the information society that had an underlying philosophy, i.e., a project would have to be justifiable from the point of view of the interests of the State, the public interest, but would also have to make sense from a business point of view. Well, I was a firm believer in mobility both for computing and connectivity and it was also necessary to devise a programme which would meet the need to develop the framework and the mobile Internet business model for the service providers who were the ones that had to make the investment. Therefore, for me the 'e.escola' was something natural. And why students? Because I believed that if we sped up the contact those new generations had with these tools, as was the trend, we would be able to take a leap forward when compared to any other country. (Mário Franco, interview)

It becomes clear, thus, that the project takes shape with a view to increasing the Internet access figures in Portuguese households. As such, the school would have a merely circumstantial role in that it was used to distribute the computers among the children, who were themselves vehicles taking the computer and Internet access to homes that



did not have them. José Vítor Pedroso, Coordinator of the Educational Resources and Technologies Team (ERTE) of the Ministry of Education, has a more optimistic view for he believes that it is this feature that makes this technological measure particularly original in education: unlike all previous measures, it was not meant to furnish schools with equipment. The student and the family were the targets of this initiative. In this sense, being able to take the computer home is, as advocated by the Education Minister at the time, added-value since it will allow children to take further advantage of the different uses of the computer.

In summary, the interviewees list the following advantages that the 'Magalhães' computer brought either directly or indirectly:

- Enabling children to have access to new technologies;
- Equal opportunities, democratisation of access;
- Enabling access to families, namely to those that had never before had the opportunity;
- Improving knowledge of English, Portuguese and Mathematics;
- Improving educational attainment in general;
- Promoting digital competences;
- Boosting the national economy, interest in exporting;
- New technologies as work tools;
- Increasing computer and broadband penetration rates;

### **3.2. Preparing for the future, inclusion in the Information Society**

When devising and implementing the initiative, the focus was on the production of a computer suitable for children and on its distribution at the expense of other strategies that included teachers, such as providing training for them and above all getting them involved in this process of change. One can see, however, that the high costs it entailed made this a very expensive initiative, giving the impression that

an opportunity was lost considering the investment made. Yet, there are those that consider that “the ‘e.escolinha’ programme was revolutionary”, as stated by Albino Almeida, a representative of the parents. Luís Amaral, Member of the APDSI (Association for the Promotion and Development of the Information Society) High Level Group sums up the mood that can be captured in most of the interviews:

It was an excellent idea. It came up at the right time. I get the impression that it had the potential to have a tremendous impact, however, despite all its qualities, I think it was an idea that was not developed, not by a long shot, as well as it should have been. But I believe it was visionary and an extremely intelligent measure. The way it was then implemented was what eventually limited the potential the idea actually had. (Luís Amaral, interview)

### **3.3. Implementation and evaluation**

As far as the evaluation and appraisal of the initiative is concerned, the evaluation that is made depends directly on the perspective adopted. If the emphasis is placed on Internet access in Portuguese households, as the ratios were improved, the ‘e.escolinha’ naturally increased Internet consumption. If the economic perspective is chosen, then for some companies at least, this project was clearly advantageous to the point that it enabled the ‘Magalhães’ to break into the international market, but it nevertheless fell short of the initial expectations. However, if the pedagogical aspect is to be evaluated, the interviewees point out the various problems the project had.

When asked to give their views on the programme, there are both arguments in favour of its success as well as negative features, which are briefly summarised in Table 2.

**TABLE 2:** Appraisal and evaluation of the implementation of the ‘Magalhães’ initiative

POSITIVE FEATURES AND ACHIEVEMENTS IN THE IMPLEMENTATION OF THE ‘MAGALHÃES’				
LOGISTICAL BENEFITS	EMPOWERMENT OF THE CHILD	ECONOMIC DEVELOPMENT OF THE COUNTRY	INITIATIVE AND ARTICULATION OF THE ENTITIES	ACCESS OPPORTUNITIES
Distribution of computers Access to two operating systems Educational contents	Self-esteem, enthusiasm and motivation for children and families Children’s autonomy, reinvention of the role of the teacher Empowerment of the child, learning, literacy	Exporting, national economy Information Society (future citizen) Transversal nature of ICT	Private initiative Involvement of local government Teachers’ commitment, dynamism of schools Adhesion of population, social impact	Internet access Access for families Younger generations’ contact with technologies.
NEGATIVE FEATURES AND DIFFICULTIES IN THE IMPLEMENTATION OF THE ‘MAGALHÃES’				
TECHNICAL AND LOGISTICAL DIFFICULTIES	USAGE DIFFICULTIES FOR CHILDREN AND FAMILIES	TEACHING DIFFICULTIES	STRUCTURAL PROBLEMS	POLITICAL PROBLEMS
Internet access Distribution delays, unequal access Electrical Infrastructures Maintenance, technical support, breakdowns Computer memory Obsolete technology	Insufficient support for students and families Families’ investment Using computer for fun	Distribution to teachers Non-use in the classroom Teacher resistance Teachers’ bureaucratic burdens Dynamism of schools	Financial sustainability Subversion of the original objective Lack of preparation, mass access Lack of articulation Inexistence of evaluation Insufficient contents Equipping of schools Gaps in teacher training	Management transparency, direct award procurement Promotion in the media Political negativism Political propaganda

The previous table reveals extreme views regarding the positive and the negative aspects of the ‘e.escolinha’ initiative. On the one hand, it boosted the technology and telecommunications market, enabled the computer to be exported and Portugal was regarded as an example for others to follow. On the other hand, the lack of financial sustainability, the excessive political propaganda and the schools’ lack of preparation prevented full benefit from being taken of the potential that all the interviewees acknowledge the idea had.

There was a lack of time and strategy for an initiative such as this one. The first version of the 'Magalhães' had several problems with the contents, precisely because there was so much pressure to have a computer ready to be distributed, as acknowledged by Paulo Trezentos (Caixa Mágica). Decision times for implementation were very quick and the distribution of such an amount of equipment turned out to be very complex (meaning that students in the same class were getting their computers at different times). On the other hand, teacher-training was not planned in good time and neither was the involvement of families and local governments (to a certain extent, 1st cycle schools are dependent on these authorities) José Vítor Pedroso sums it up: as it was "an innovative project at a global level, we had to create it and face the first problems for the first time". Another problem was the excessive propaganda undertaken by the government, with the involvement of the Prime Minister (José Socrates) himself: "governments should promote all that they do well, since it is empowering, but the 'Magalhães' was always regarded as a propaganda tool, as something new in political innovation. Therefore it lost much of its momentum and pedagogical impact." (João Granjo, ANP)

Problems arising from the lack of quality of the contents, the poor teacher-training strategy and the distribution in different phases meant that the potential this initiative was presumed to have was not properly explored. Nevertheless, it was an important project particularly for the children, and their families, who for the first time had access to a computer, as we will see in section 5. That notwithstanding, perhaps one of the main problems affecting this initiative was the lack of a long term vision, which led to the lack of sustainability that defeated one of the initiative's main purposes: providing all children with access to a computer. By not being economically viable (which was also partly due to an economic crisis), the programme is no longer able to fulfil this purpose

I believe that what it lacked was sustainability, in other words, it is a good idea, almost a flash of genius- from the point of view of election propaganda- which was effective for those who benefited from it. (Emídio Guerreiro, PSD)

### 3.4. Obstacles and continuance possibilities

As far as the continuance of the initiative is concerned, there does not seem to have been a clear and outright cut but instead it was just left to fade away. With the change in government, the new Minister of Education (Nuno Crato) did not continue the programme and there was no initiative meant to replace it. At the time of the interview, Mr. Crato showed an interest in “evaluating the programme” despite considering that “in terms of educational policy, the teaching potential of the ‘Magalhães’ computer was overestimated”.

Luís Amaral pointed out that there was no strong statement regarding technology and the role of technology in promoting society in all its components, particularly school education, as had been the case with the XVII and XVIII Governments. It is now known that such an agenda did not exist and the ‘e.escolinha’ policy initiative came to an end in a low-key fashion, which was the exact opposite of how it had been launched. However, that did not mean that the ‘Magalhães’ computer was discontinued. According to Jorge Sá Couto, head of the company manufacturing the computers, the ‘Magalhães’ project became “increasingly more international rather than national and became a Portuguese flagship project abroad”. In his opinion it was a mistake to cut such a programme, stating that it would have been important to rebuild the programme and improve it.

For the Minister of Education who oversaw the launch of the ‘Magalhães’ initiative, regardless of the continuance or not of the programme, “the first appropriation was made” and therefore, even “without any extraordinary incentives from public policies, a boost was given which may continue to take its course” (Maria de Lurdes Rodrigues, interview).

It is difficult for policies to continue from one government to the next, namely those pertaining to school and technologies (Pereira, 2013) and this case is a further example. The interviewees acknowledge the need to evaluate the measure to correct past mistakes. However, the prevailing view was the programme should continue and so ensure that new students could also have the chance to have a computer.

### 3.5. Perspectives and conceptions

An analysis of the interviews shows a variety of understandings of some key concepts involved in an initiative such as this one. The computer, school, the child and family are some of the most relevant ones. Given the nature of this study, media literacy is also a relevant topic.

It has become clear that the project takes shape with a view to increasing Internet access in Portuguese households. As such, the school would have a merely circumstantial role in that it was used to distribute the computers among the children, who were themselves vehicles taking the computer and Internet access to homes that did not have them, which, in fact, falls short of “a policy aimed at improving the diversification of pedagogical tools available for teaching and learning” as Maria de Lurdes Rodrigues intended.

The central role occupied by the computer in this strategy is evident and that may be why this policy measure with such a large social and economic impact lost something along its way. The computer, which was particularly robust since it was intended for children, was in fact the rock on which the whole governmental initiative was based. And this might be its main predicament: giving more attention to the hardware than the actual strategy, discussing issues separately instead of promoting a more comprehensive view of the challenges facing the school and the involvement of the families.

As was mentioned before, some interviewees felt that schools and teachers were given the role of distribution agents throughout the process, but for the former Minister of Education, Maria de Lurdes Rodrigues, this initiative took a new approach to school: “all of it is technological, the whole school is a space where information can be accessed”. This is a key concept which helps to understand how this measure fitted into educational modernisation strategy the government sought to promote, as was discussed in section 1. According to Mário Franco,

The prevailing perception among adults, and in society in general, is that the school is the centre of modernity. In other words, modernity, which is today perceived as coming via the Internet and computing, arrives first through school. The first contact many families had with computers was through the computer that came from school, so they associate schools and teachers

to new knowledge, which was the case a few years back. There eventually starts to be a separation between school, which represents the knowledge of the past, and technologies, which represent access to knowledge of the future. (Mário Franco, interview)

One may wonder whether this discourse, so enthralled with the technological modernization of education and, as such, denoting some kind of technological determinism (Pinto, 2003), fosters the development of competences to use and critically understand the new digital media. According to Bruno Dias, Member of Parliament for the Portuguese Communist Party (PCP), the 'e.escolinha' meant access to the machine, but, that "does not necessarily mean that it all effectively led to technological education or technological literacy which is what is expected from the so-called democratisation "

Although the interviewees understand that this measure contributed to "the decrease in digital illiteracy" (Emídio Guerreiro, PSD), it is not clear whether they all have the same understanding as to the competences we want children to develop. The issue of safety on the Internet or using the computer for learning purposes, such as improving reading skills, are some examples of digital competences given. However, competences connected with creativity and participation – relevant from the media literacy point of view- do not figure prominently.

The actual issue of teacher-training, a problem pointed out by almost all the interviewees, is mostly regarded as preparation focusing on the techniques and specific usage of the 'Magalhães' computer rather than a more holistic concern about how to teach and learn with technology.

It is, nonetheless, certainly worth emphasising that there were many initiatives that creatively explored the 'Magalhães' with great benefit to 1st cycle schoolchildren, such as the innovative projects headed by Maria do Carmo Leitão- 1st cycle school teacher at the Centro Escolar de Lamego. Also, the way the families appropriated the computer should yield results which cannot as yet be evaluated.

The former Minister of Education briefly summarised the nature and goals of this measure as follows:

Besides being a policy aimed at equipping schools, its main goal, the main goal of all these initiatives, per action line, always remained the same:

providing students with better conditions to access technology both at home and at school. This is why we linked the development of the information society to educational policies since it was not just an issue of having access to a computer at school or accessing the Internet on school grounds. It was about maximising the combination of school space with family space. (Maria de Lurdes Rodrigues, interview)

However, in covering both school and family, with the children being the connecting element, this educational policy seems to have lacked more purposefulness as well as a media literacy strategy.

#### **4. SOCIAL AND EDUCATIONAL IMPACT OF THE 'E.ESCOLINHA' PROGRAMME AND THE 'MAGALHÃES' COMPUTER**

One of the issues most often raised while the 'e.escolinha' programme was being implemented, and which the media themselves took up a number of times, had to do with the impact and the significance the 'Magalhães' computer would have for the children, particularly as regards their school work.

The campaign undertaken by the government to publicise the programme it had created, which at times resembled a form of political propaganda carried out by the Prime Minister himself (José Sócrates), appeared to envision a programme that would have important repercussions on the educational process and the pedagogical practice in the classrooms. In fact, 'e.escolinha' was launched with great expectations as to how it would revolutionise the teaching-learning process, with its promoters believing it could raise students' educational attainment.

As the actual name suggests, the 'e.escolinha' [little school] was a programme meant for 1st cycle students and 1st cycle schools, however, on various occasions the family was said to be its target group. Although it is clear that it was a personal computer to be used by children in their daily activities, both at school and at home, the question arises as to what the real *locus* of the programme was. Several of the documents setting out the Technological Plan for Education, particularly those pertaining to the 'e.escolinha' initiative, do in fact establish 1st cycle students as the targets of this governmental measure and the



school as the context it is meant for. This information is confirmed in the Audit Court reports<sup>10</sup>, as the following quotes show:

The 'e.escolinha' initiative, beginning in the 2008/2009 school year, is aimed at students attending the 1st cycle (1st grade to 4th grade) and seeks to equip them with a laptop computer and computer programmes that are suited to their needs and characteristics, and makes provision for their access to a broadband internet connection. (Tribunal de Contas, 2010, p. 27).

Ensuring 1st cycle students have access to personal computers with educational contents;/ Generalise the use of the computer and the Internet in early learning; /Ensure thousands of families have access to their first computer (Tribunal de Contas, 2012, p. 96).

The objective stated in the last quote extends the programme's objectives to families, seeking to create the necessary conditions for all families to have access to a computer. This intention is reasserted by several interlocutors connected with the Technological Plan for Education in their statements to the Temporary Parliamentary Committee of Inquiry on the Government's Actions Regarding the Foundation for Mobile Communications <sup>11</sup>. The hearing with Maria de Lurdes Rodrigues is one which most highlights the family as the target group of the various e-initiatives. In the former Minister of Education's opinion, placing the emphasis on supporting families (particularly those with children and teenagers in school) so they can have access to means that enable them to gain access to information and knowledge has "much greater potential bearing in mind the objectives of the development of the information society" (CIP, 14th Meeting, 24 March 2010, n.p.).

It is true that the objectives are not incompatible. Apparently, at the centre of the process there is a child-student, who has been given access to a personal computer which is carried from home to school, and

.....  
10 Reports written in the context of the audit " Public Funding of the e.Initiatives ('e.escola', 'e.professor', 'e.oportunidades', 'e.juventude' and 'e.escolinha') (2010) and the audit to the Education Statistics and Planning Office of the Ministry of Education (2012).

11 Committee approved through Parliamentary Resolution no.8/2010. Its main purpose was, in broad terms, to look into the management of the public funds allocated to the Foundation for Mobile Communications (FCM) and to the Fund for the Information Society.

this may actually serve both purposes. Nevertheless, the documental analysis undertaken within the scope of this research shows a lack of clarity when defining who the main target of the initiative is thereby raising doubts as to whom the programme was intended for after all.

In her hearing before the Parliamentary Committee of Inquiry Maria de Lurdes Rodrigues stated, with reference to 'e.escola', that " we are talking about families, we are not talking about schools because the Programme is intended for families" (CIP, 14th Meeting, 24 March 2010, n.p.). Maria de Lurdes Rodrigues also explained that in relation to 'e.escolinha', the mode of access to the programme changed, with the school being its centre. However, as the quote below shows, the school is mostly a mediator between the children and their families for the acquisition of the computer:

(...) 3rd cycle and secondary education students are one thing, as, in fact, their autonomy is different and it is clear to families how important a computer is for their homework and for their individual development; that is not so much the case for 1st and 2nd cycle students so we need to mobilise other resources since these children, particularly those from certain backgrounds, cannot do it by themselves.

And this is where the school comes into play, in the 1st cycle. Having a Programme in which the family's initiative is assumed and both this initiative and the teenagers' autonomy are respected is very different from having a Programme for 1st cycle students, who do not have such autonomy and, therefore, it is the school that is able to overcome the autonomy deficits and the difficulties families have in accessing information, to take them out of such a ghetto and bridge the gap. We have never been able to come up with anything other than the school to mediate this relationship.

Therefore, in the programme for the 1st cycle we radically changed the process of adhesion with this mediation being carried out at school, but we also respected the family's interest for nobody ever imposed anything on the families." (Maria de Lurdes Rodrigues, in CIP, 14th Meeting, 24 March 2010, n.p.).

The former Minister of Education acknowledges the support that both schools and the teachers can provide to children in their relationship with computers, but the role they each play remains nuclear. Do they merely mediate the access to the equipment or are they expected to promote the use and critical analysis of the 'Magalhães' computer,

integrating it into pedagogical activities in the classrooms? Official discourse was never very clear on this issue. In some cases, emphasis was placed on the school, in others on the family. As a result, the practices surrounding 'Magalhães' were developed without a monitoring plan. As will be seen from the data presented further on, in the schools participating in this study the 'Magalhães' was used incidentally and sporadically. Most of the activities were carried out depending on the circumstances and the teacher's knowledge.

However and in general terms, the programme deserves credit for democratising access. As can be seen in Table 3, between 2008 and 2011 the 'e.escolinha' enabled approximately 500,000 children to have access to a personal computer, despite not having achieved the distribution target of 750,000 computers<sup>12</sup>.

**TABLE 3:** Distribution figures for 'Magalhães': target vs actual

No. OF COMPUTERS	1ST PHASE	2ND PHASE	TOTAL
Target	500 000	250 000	750 000
Actual	401 711	94 091	495 802

**Source:** Audit Court Reports (Tribunal de Contas, 2010 and 2012)

According to data provided by the Ministry of Education (GEPE, 2011), the 'e.escolinha' contributed significantly towards reducing the ratio of students per computer. Before the measure was implemented (2005-2006), the student-computer ratio in 1st cycle schools was 15:9 for public schools and 9:5 for private ones. This figure decreased substantially the year the 'Magalhães' computers were distributed (2008/2009), having fallen to 1:1 and 1:2 for public and private schools respectively. Merely a year after the implementation of the initiative, the

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<sup>12</sup> The distribution of 'Magalhães' was suspended at the end of the 2010-2011 school year, which may have contributed to the target number not being reached. By December 2009, €85million had been spent on the 1st phase of the 'e.escolinha' initiative, according to analysis of the expenses undertaken with the several e.initiatives (Tribunal de Contas, 2010).

student-computer ratio reached the maximum rate of 1:1 in both types of schools. In terms of students per computer with an internet connection, the situation was similar, dropping from 26:5 in public schools and 13:08 in private ones, in 2005/2006, to a ratio of 1:1 and 1:2 respectively, in 2008/2009 (GEPE,2011).

Therefore, as far as access is concerned, the programme seems to have been successful and met the objectives in terms of student-computer ratio. The adherence to the programme was also noticeable in the schools participating in this study. Of the 1 517 children surveyed, 1490 (98%) obtained the 'Magalhães'<sup>13</sup> computer, only 27 (2%) chose not to purchase it. The same percentages were obtained from the parent questionnaires: of the 1264 surveyed, 98% stated they had purchased the computer<sup>14</sup>. It was thus an overwhelming majority of children (and families) that joined the initiative.

When questioned about the reason for not purchasing the computer, of the 27, eleven stated they already had another computer, five said it was their parents' decision, five children were immigrants who had recently arrived in the country, while two mentioned errors or delays in subscribing to the initiative. Only one child stated lack of financial resources as a reason for not purchasing 'Magalhães'. Another said he had not been given the computer by his parents as a form of punishment while two others claimed not to know the reason why they did not get the computer.

The parents' answers are similar to the children's as far as the reasons for not purchasing the equipment are concerned. When questioned about the reasons for joining the programme, the parents mention mainly the learning advantages the 'Magalhães' could bring their children and the fact that they would not like their child to be at a disadvantage in relation to their classmates. The low price charged is also

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13 During the course of the programme, two versions of the computer were distributed. The second version (MG2) was more advanced in terms of hardware. Of the children surveyed, 53,5% received the MG1 and 47,5% got the MG2. Most of the 3rd grade students got the second version of the computer (93.6% got the MG2 and only 5.6% the MG1) whereas the majority of the 4th graders got the first version (94.4% got the MG1 and only 6.4 the MG2). This issue is connected with the year it was distributed. Some 4th grade children got the MG2 due to delivery delays.

14 Regarding the cost of the computer (N= 1182), 62% spent 50€, 19% paid 20€, while the remaining 19% got it for free. These figures show that the majority of children paid the highest price. Of these, 38% benefit from the School Social Services.

mentioned by several parents, particularly by those that did not have to spend any money at all. It should be mentioned that some parents clearly show some disappointment with the infrequent use of the equipment in the classroom, and were uncertain as to what their decision would be if the issue of purchasing the computer was raised at that moment.

Both the children and the parents' answers as to why they hadn't purchased the 'Magalhães' show that the main reason was not financial difficulties. When cross-referencing this variable with the parents' education level and professions, we did, however, find five cases of unemployed mothers and two of unemployed fathers (in one of these cases both mother and father were jobless), but these situations may have arisen after the computer had been bought. In general, the number of students who do not have the 'Magalhães' is significantly higher among those who with less skilled jobs.

In terms of education level, although 13 children stated they did not know or were unsure, it was found that in five families both parents had completed basic education, in two cases they had completed secondary education and in four others they had a degree. There are also two cases in which the mother had the secondary education level while the father had a degree and another case in which the mother had completed secondary education and the father had done basic education. Based, then, on the information collected on the families that did not purchase the computer, it can be assumed, according to the answers provided by the children and the parents, that the financial component was not the main reason behind that decision. In addition to this conclusion, we may add the fact that only two children from the group that did not buy the 'Magalhães' stated they did not access to the Internet at home (there were also two cases where no answer was provided to this question).

What about the children who purchased the 'Magalhães'? Was it the first computer in their household? According to the children's answers (N= 1436), 92% already had a computer at home, while for a mere 8% it was the first computer they had at home. Of those who already possessed one, 36% stated they owned one, 35% had two computers and 30% three or more computers. The Internet access figures are very

similar to these. Of the 1456 answers, 91% mentioned having Internet access at home and only 9% stated they did not have such a service. The fact that the vast majority of the families had Internet access at home may have been the reason that made 95% of the parents decide not to subscribe to the broadband service when purchasing the computer. Of the 60 families (5%) that subscribed to the service, only four did not have Internet access at home.

When characterising the group of students (N= 113) for whom the 'Magalhães' was the first computer at home, it can be said that there is no pattern as far as their parents' school qualifications are concerned. The various school levels are represented with a slightly higher number of fathers who have the 4th grade (16 cases, 15%) and mothers who have the 6th grade (19 cases, 18%). In terms of occupations, the scenario is slightly different. Most of the households where the 'Magalhães' was the first computer consist of families with low skilled or unskilled jobs or who are unemployed. This analysis is equally applicable to the 9% (N= 129) of households that did not access to the Internet, i.e., they have a similar characterisation in terms of school qualifications and types of occupations.

In short, it can be said adherence to 'Magalhães' computer was practically on a massive scale. In fact, the reason most often mentioned for not purchasing it is ownership of other computers, which means that they are children who already had access to this technology before 'Magalhães'. Although we acknowledge the initiative was successful in terms of access, we believe that for most of these children and families, access to their first computer was not what was at stake. In that sense, the grand objective established by the government to raise computer and broadband penetration and broadband rates simply does not do apply to the group studied. Most of the families already had access to a computer and saw the 'Magalhães' as an opportunity to purchase a computer at a very affordable price, thereby giving their children the chance to have their own personal computer. This aspect is frequently emphasised in both the children and the parents' answers: having a computer just for the child (which she can personalise), which she can use without having to ask adults or older siblings for permission. The children's questionnaires contain some statements that illustrate how

important this is: “this one is only mine and the others are my father’s”; “the computer is only mine and I can use it when I feel like it”; “it was good to have a computer just for me”; “I was able to know what it was like to have a computer of your own”.

The surveyed parents also mentioned the importance of the ‘Magalhães’ for learning, particularly school learning deriving from its use at school. These were, in fact, their expectations when they purchased the computer. As it was a measure aimed at ensuring ‘one computer per student’, they presumed it could be a medium and a resource that would be used frequently in the classroom, facilitating and aiding in the educational process and preparing the children for the digital world. However, this was not what the parents saw happening in their children’s daily school life, and it became clear in some of the answers in the questionnaire that there were doubts about the compliance with the objectives set by the government and, therefore, about the advantages of having bought the ‘Magalhães’.

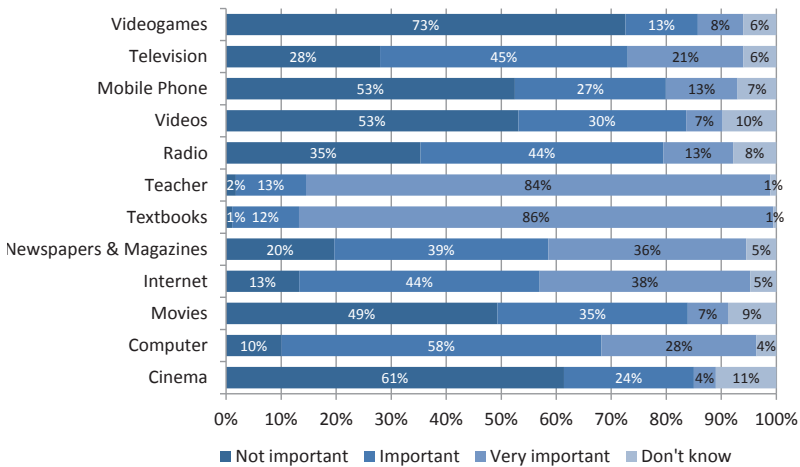
In the next section, we will focus on these issues. It is our intention to go beyond the issue of access and analyse how the children used the computer at school and at home, seeking to ascertain whether the ‘Magalhães’ was in fact an asset for these children in terms of school, creativity and digital literacy.

## **5. THE ROUTES OF THE ‘MAGALHÃES’: BETWEEN HOME AND SCHOOL**

### **5.1. Valorisation of the media**

Before discussing the issues specific to this section, we will examine the importance children, parents and teachers assign to digital media in young people’s daily lives and in their school learning process.

With regard to children, Figure 2 shows how important the different media are for them when it comes to learning.



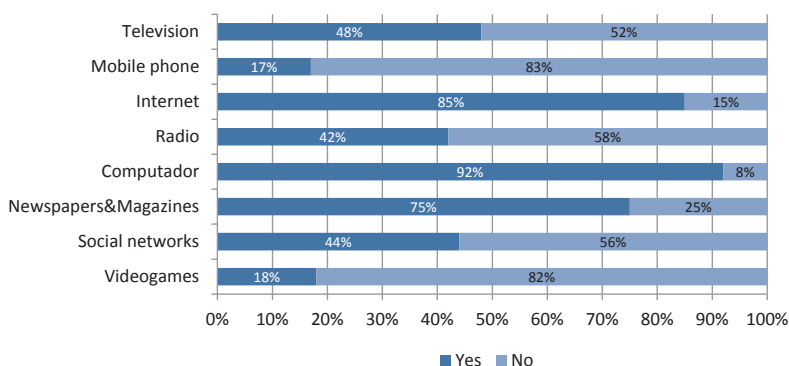
**Figure 2:** Level of importance children consider each medium has in their learning.  
**Source:** INQCHILDREN

As can be seen, the more traditional learning means- textbooks and the teacher- are those considered to be the most important. Only very few children do not regard them as important. The children’s opinions seem to reveal the representations they make based on what they hear and what is passed on to them by the adult generation about what is important and appreciated in learning. Media are more associated to entertainment and pastimes than to learning. Videogames, the cinema, videos, and films are the ones the children mention as being less important when it comes to learning whereas the computer, television, the internet, as well as newspapers and magazine are regarded as the most important. These answers may derive from the representations children have of these media, but also from the different uses they make of them, i.e., some of them might be more associated to entertainment and fun (for instance, videogames) while others to work and information (for instance, the computer and newspapers). In these representations, there is a separation between entertainment and learning as if the media that entertain could not be used to learn.

Parents’ opinions regarding which media should be used and analysed at school are not very different from the children’s answers. As



can be seen in Figure 3, parents mention the computer (92%) as the technology that is mostly required in the school context. It is followed by the Internet (85%) and by newspapers and magazines (75%). As for the remaining media and technologies, more than half of the surveyed parents considered they should not be used and analysed in class. Videogames and mobile phones get the most negative answers in this respect. Again, this may be due to the connection that is made between these media and entertainment. At any rate, most parents (83%) consider that school should help children to develop a more critical and attentive relationship with the media, while only 3% disagree and 14% neither agree nor disagree. These opinions may be associated to the almost unanimous importance parents assign to the role of media digital technologies in their children’s lives. In fact, 52% consider them important and 43% very important; only 5% state they are unimportant or not very important. It should be noted that there appears to be a dependency connection between the variables “importance assigned to media” and the “level of education” and “profession” (value-  $p < 0.05$ ). On the whole, more importance is assigned to the role of media by parents whose education levels are higher and those who have more skilled jobs than by those with lower education levels and less skilled jobs.

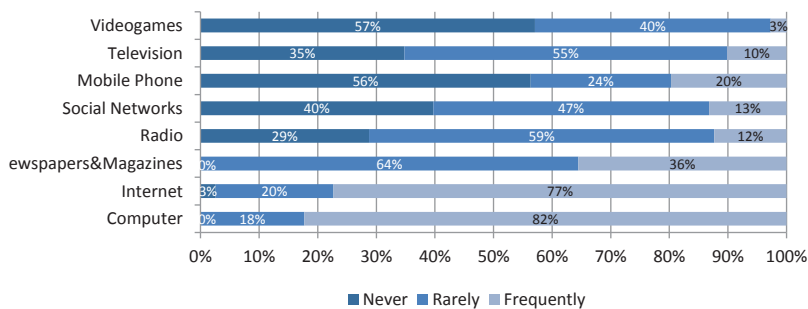


**Figure 3:** Parents' opinion on media and technologies that should be used and analysed in class.  
**Source:** INQPARENTS

The overwhelming majority of the teachers (99%) regard media as very important (36%) or important (63%) for the children's lives. A similar percentage (97%) considers them to be very important (39%) or important (58%) for curricular activities. Only 3% regard them as not very important and there were no replies in the "unimportant" category.

Despite the importance assigned to media, not all of them are regularly integrated into the teachers' pedagogical activity. (Figure 4) Teachers with fewer years of teaching service use the different media more regularly in their pedagogical activity. It should be stated, however, that using them in their pedagogical activity does not mean it is necessarily in the classroom or in interaction with students. Other questions on this topic show, for instance, that when teachers state they use the computer in their pedagogical activity they do so mainly to plan their lessons (84%) and to communicate with colleagues (76%). Therefore, sending emails, conducting Internet research and planning lessons are the activities the teachers mention as doing the most often on the computer in their pedagogical activity, with percentages over 80% in all three cases. In contrast, playing games, listening to the radio, and downloading music, films and games are the activities which most often get the highest percentages in the "never" frequency.

Newspapers and magazines are the media teachers use the most after the computer and the Internet, although the percentage is not particularly high (36%). This answer, which may reflect the tradition of exploring materials from the written press in schools, is also in line with what children and parents had to say about the relevance of using the written press in class. In fact, on the whole, the media teachers mention as using most often in their pedagogic activity are the ones parents and teachers assign the most importance to and the reverse is also true. We do not believe, however, that this situation occurs by "contagion" from teachers to students and/or parents. Rather, we believe it to be a reflection of the way the different media and technologies are perceived by society, the place they occupy, the roles they play and the value they are assigned in general terms.



**Figure 4:** Frequency with which teachers use media and communication technologies in their pedagogical activity  
**Source:** INQTEACHERS

Taking into account the opinions of the three groups surveyed, it is clear that media are regarded as having an important role in young people's lives nowadays. The computer and the Internet are the most valued media for learning and are also the ones teachers state as using the most frequently in their pedagogic activity. The acknowledgement these groups give to these media is shared by society as a whole as they are seen as working tools which can help promote teaching and learning.

As there is no doubt about the importance given to digital media and technologies by the three surveyed groups, the next point analyses the uses and non-uses of the 'Magalhães' computer at school and at home.

## 5.2. Uses and non-uses of the 'Magalhães' computer

Despite the adherence to the 'Magalhães', the percentage of students actually using it was not as high. In fact, of the children who answered this question (N= 1490), 65% stated they used it as opposed to 35% who said that they did not use it or stopped using it. The data shows that girls (70%) use the 'Magalhães' slightly more than the boys (61%.) Computer breakdown is the reason most often given for it not being used and other reasons include preferring other computers or not liking to use the 'Magalhães'. These last two reasons reveal the children's

disappointment, even among those that actually used the computer, with its poor performance ('it's slow', 'it's limited', they said). This was particularly the case for the MG1. The breakdowns were a frequent problem, which was more acute for the first version. Other issues were the loss (or even theft) of the computer and the loss of the battery charger. Parents were not always willing or able to have the equipment repaired since the cost could often be higher than the price paid for the actual computer.

There seems to be a dependency connection (value- $p < 0.05$ ) between the variables 'parents' qualifications' and 'use of the 'Magalhães' computer'. On the whole, use of the 'Magalhães' is higher among children whose parents have higher qualifications. Similarly, the data shows a significant dependency connection (value- $p < 0.05$ ) between the variables 'parents profession' and 'use of the 'Magalhães' computer', i.e., the use of the 'Magalhães' is higher among children whose parents have more skilled jobs.

When it comes to the use of the computer in class, 52% of the children who replied (N= 969) stated they did use it whereas 48% said they never did. Of those who did use it, only 9% did so on a regular basis and the remaining stated it was infrequent. It is worth mentioning that a high number of children who never used the 'Magalhães' in class stated that they would like to.

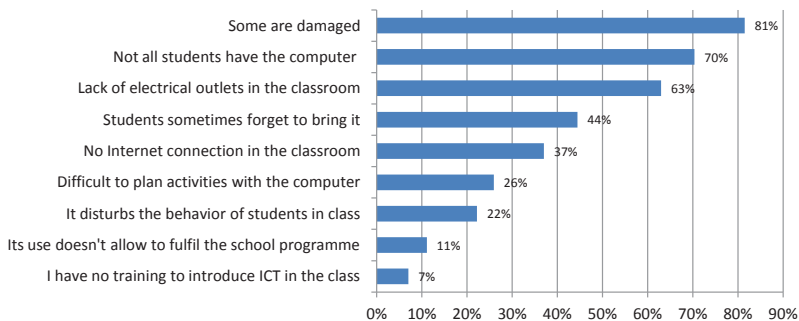
When asked about the reasons for not using the computer in class, the main reason given is that it was not required (by the teacher). There are other reasons that are stated in the open-ended questions, which seem to confirm some of the information that was collected informally from teachers and schools. They include, for instance, inadequate electrical power supply in schools; difficulty or even impossibility to charge batteries simultaneously and the high number of computer breakdowns. There are also cases of children whose parents did not allow them to take the computer to school in case it got damaged. This argument illustrates how difficult it is to know what in fact was the objective for the computer and the context it was primarily meant to be used in, as mentioned previously when discussing the *locus* of the programme.

The children who stated they used the 'Magalhães' did so mainly in the Portuguese Language subject, followed by Environment Study,

Mathematics and finally Artistic Expressions. Some children also mentioned using it in the Curricular Enrichment Activities, particularly when they included ICT lessons.

Although they stated they considered textbooks as one of the most important means for learning, as seen before, when the children were asked whether they preferred to do their work on the ‘Magalhães’ or in their notebooks/textbooks, of the 303 replies, 75% mention the ‘Magalhães’ and only 25% notebooks and textbooks.

The not very frequent use of the computer at school, which is clear from the children’s questionnaires, is confirmed by the data from the teachers’ questionnaires: 8% state they never used it; 28% used it before but not any longer; 42% use it sporadically and only 22% state they use it quite frequently. The reasons given by teachers who never used or stopped using the ‘Magalhães’ are shown in Figure 5. As can be seen, damaged computers, the fact that not all students have them, the lack of electrical outlets in the classroom and students forgetting to bring it are mentioned by more than 40% of the teachers. Technical and logistical reasons seem, therefore, to be the main reasons hindering the use of the computer in the classroom. Less frequently the respondents also reported difficulties that arise from work organisation and management and from training



**Figure 5:** Reasons for the non-use of the ‘Magalhães’ computer reported by teachers  
**Source:** INQTEACHERS

As for the teachers who stated that they use the computer, be it sporadically or frequently, only one mentioned using it on a daily basis; 18 teachers reported using it one or more a week while 14 stated they used it only on a monthly basis. In other words, the use of the computer in educational activities is still sporadic, being a resource to carry out specific tasks. It is an auxiliary tool used occasionally and not one which is integrated in the teaching-learning. The activities teachers say students carry out most often on the 'Magalhães' computer in the classroom, which will be discussed in the next point, are indicative of this sporadic practice.

This scenario is also confirmed by the parents. When asked about the frequency with which the children took the computer to school, 37% (N= 1187) stated they had never taken it while less than 0.5% stated they took it every day. The numbers are similar to one another when it comes to those who stated once a week (18%), more than once a week (17%) and less than once a month (16%). When inquired about the reasons for never having taken to the computer school, the majority (63%) stated that the teacher did not require its use in class, while 40% said it was due to computer breakdown. Other reasons include the excessive weight in children's backpacks (3%), the fact that ICT classes were cancelled or issues with the school's electrical power supply.

With regard to its use at home, there were some disparities between the children's and the parents' answers, which may be explained by different understandings of what it means to use the computer. We assume that the fact the children had the computer at home may have led them to answer affirmatively to the question about other spaces (besides school) where they used the computer. According to the children's questionnaires, 8% do not use the computer at home; in the parents' questionnaires (N= 1220), 25% state that their children never use it at home. The highest percentage occurred in the option 'more than once a week' (35%) and only 10% chose 'every day'. The main reason for not using it at home is also computer breakdown (64%). Other reasons mentioned included the children using other computers (28%), the fact they did not find the equipment interesting (11%) and that the teacher did not require its use at home (8%). The children use the 'Magalhães'

mainly in social spaces of the house, such as the living room or the kitchen, but the bedroom is also mentioned by the parents as a place of choice for using the computer.

Still on the subject of uses, we sought to ascertain whether the children had rules regarding the use of the computer both at school and at home. As far as the home context is concerned, more than half (68%) state they do while 32% say they do not. The rule most often mentioned refers to the amount of time they are allowed to spend on the computer: despite not being a considerable number, 33% do state they are not allowed to use the computer for a long time. Few children (only 12%) report that their parents impose restrictions on Internet access from their 'Magalhães' computer, but when asked about Internet access at home regardless of the device, 83% state they had to follow some rules. Some of those most often mentioned are related to issues of personal and family safety: 'I cannot talk to strangers' (81%) and 'I cannot give personal information about me or my family' (70%). Despite the parents' concerns, as reported by the children, about preserving their children's privacy and keeping them safe, a little over half (56%) the number of children mention having rules about posting photographs or videos of themselves, their family or friends. Considering their ages, one could expect there to be a greater concern regarding the public availability of this type of content.

Among the parents surveyed, great care appears to be taken to supervise their children when using the computer and the Internet. Thus, 85% state they monitor or accompany their children on the computer, although 72% of the children report that they are not accompanied / do not get help when using the 'Magalhães'. Restricting the time their children can spend on the computer (67%), 'not allowing them to talk to strangers on the Internet' (66%) and 'not allowing access to certain sites' (63%) are the parents' major concerns, which are line with what children had to say on this issue.

Application of Chi-Square tests revealed the existence of a dependency connection (value  $-p < 0.05$ ) between parents' 'education level' and the acts of mediation regarding their children's use of their technology, namely:

- Restricting the amount of time spent of the computer/Internet;
- Not allowing access to certain sites;
- Not allowing access to certain programmes or games;
- Not allowing the downloading of games/programmes from the Internet;
- Not allowing children to talk to strangers on the Internet;
- Monitoring/accompanying children on the computer.

In all the above cases, the frequency is significantly higher for parents with higher levels of education. There is also a significant dependency connection (value  $-p < 0.05$ ) between parents' 'profession' and all the acts of mediation undertaken with the exception of 'restricting the amount of time spent of the computer/Internet' (value  $-p > 0.05$ ). In other words, parents with higher skilled occupations undertake those acts of mediation much more frequently when compared to parents with lower skilled jobs.

Rules were also established for using the 'Magalhães' at school. Of the 44 teachers who discussed this issue, only one reported not having set down rules. These were mostly about bringing the computer to school with a charged battery (36) and using the computer in the classroom under the supervision of a teacher (31).

When discussing the rules established for children when using the media both at home and at school, we must always bear in mind children's age group. These are children who are progressively building their autonomy, namely in using the media, and who are still very dependent on their parents. This dependency occurs in the children's relationship with their parents, but also in the parents' relationship with their children as they seek to fulfil their parental role of protecting their children. In a previous study (Pereira, 1999) focusing on television, it was ascertained that there was a predominance of restrictive parental mediation to the detriment of mediation based on negotiation or dialogue. Rather than forbid or restrict, this type of mediation seeks to prepare children to deal with the risks and the opportunities that the media present. The need to raise parents' awareness to this and to encourage them to have a more active mediation is another reason why it is important to promote media education.



Before moving on to the next point about the activities carried out on the 'Magalhães', we will briefly mention the programmes the children like the most and the least as well as the ones they use most often. After all, these programmes may also stimulate or discourage computer uses.

Although there was a wide variety of an answer as regards the programmes the children liked the most and the least, it was possible to group the answers and categorize them by groups. In terms of the programmes the children most like, games in general take first place, particularly action and adventure games, followed by educational games and resources installed on the 'Magalhães' (for instance, 'Eu Sei' [I know], 'ClicMat', 'A cidade do faz-de-caso' [Pretend City], 'Super Tux', 'À descoberta do ambiente'[Discovering the Environment], 'English is Fun', 'Diciopédia'), Microsoft Office programmes (Power Point and Word) and programmes which allow them to paint, draw, listen to music and watch videos. The programmes children say they like the most are also the ones they use most often. Oddly enough, with the exception of the games they play for fun, the other programmes are also the ones which appear in the 'I like the least' category and no reason could be found to explain this discrepancy in opinions.

### 5.3. Activities

By analysing the activities carried out on the 'Magalhães', we can ascertain the range of activities the computer enabled the children to do and the type of experiences it may have stimulated.

The range of activities is not very wide or innovative, as can be seen in Tables 4 and 5, as the activities mentioned are often those which children already usually carry out on some other medium (for example, reading and writing texts and playing games). Of the 18 activities presented to the children (see Appendix A), this study focuses on the five activities children carry out the most often and the five they never do, at home and at school, according to the children, the parents and the teachers. As can be seen, there is a great similarity in the three groups' answers both in terms of the activities undertaken and those not. The data obtained from the children's questionnaires do not show

a dependency connection with the variable 'parents' qualifications' and the various types of activities carried out with the 'Magalhães', the same is true for the variable 'parents' profession'. The activities children do on the 'Magalhães' are, thus, similar among the various socio-economic groups, despite the fact that children whose parents have higher qualification and higher skilled jobs use the computer more frequently, as mentioned before.

When it comes to gender, there is a significant dependency connection ( $p < 0.05$ ) between this variable and the types of activities done at home. For example, drawing, reading and writing texts, editing images and photographs are activities more often carried out by girls than boys. Conversely, downloading music, films and games and watching and producing films are activities that boys do more. As for the activities carried out at school, there is no dependency connection between this variable and gender, which can be explained by the way work is organised in the classroom.

Playing games is the activity most often done at home, according to children and parents. It is an activity that attracts the interest of both boys and girls, but the percentage of boys who state they do it many times (80%) is slightly higher compared to girls (72%). Some of the games are those which are installed on the computer and others are available online. At various points in the questionnaire, and not only in this question, we were able to ascertain that the computer served mainly for the purpose of playing, being more associated to entertainment and fun than to work and school learning (despite the fact that school learning can also be fun). Indeed, some of those games, particularly those that are frequently used at school, have educational purposes and are linked to some of the subjects studied in 1st cycle schools (for example, Mathematics and Environment Study)

Activities such as reading and writing texts, as well as drawing, which are usually associated to school tasks, are frequently mentioned both at home and at school, more so by girls. Still within this category, one can include 'doing exercise' and 'making powerpoints' (usually for small assignments). Of the activities mentioned in the "frequently" column, the only one which could not be done without a computer is "doing an Internet search". Despite being one of the activities most often

mentioned, only half of the children report doing it frequently (50% of the boys and 46% of the girls) at home; the other half either state they never do it (29% girls and 28% boys) or not frequently (26% girls and 22% boys). This scenario changes completely when we look at what happens at school: more than half (54% boys and 52% girls) state they never do an Internet search at school while only about a third report doing it frequently (27% girls and 26% boys). This finding may be linked to Internet access at school: although only nine teachers mentioned not having Internet access at school, a much higher number of them (31) report not having access in the classroom. Besides this, even when there is access, the connection is not always very good and in some schools Internet access in classrooms is only via the teacher's computer as there is no wireless connection.

As for the children who do carry out Internet searches, we were not able to ascertain whether they were taught how to do it, in other words, whether work was done with them on how to look for information critically, analyse search results, compare sources, identify and validate information collected and reference findings. Carrying out an Internet search according to certain objectives and guidelines is very different from one in which children aimlessly drift online without any method for browsing. Learning to do conduct a search is an essential skill, and it is above all the school which has the task of promoting children's information and digital literacy so that they are able to cope with the demands and requirements of the information and knowledge society, regardless of the context where research is done.

**TABLE 4:** The five activities children carry out most and least often on the ‘Magalhães’ at home, according to children and parents

		FREQUENTLY	NEVER
<b>Children</b>		Play games	Write on blogs
		Listen to music	Watch the news on the Internet
		Conduct a search on the Internet	Go to social networks
		Read and write texts	Share photos, videos or music
		Watch videos and films	Produce videos and films
<b>Parents</b>		Play games	Write on blogs
		Conduct a search on the Internet	Produce videos and films
		Listen to music	Send emails
		Draw	Watch the news on the Internet
		Read and write texts	Download music, movies, games...

**TABLE 5:** THE FIVE ACTIVITIES CHILDREN CARRY OUT MOST AND LEAST OFTEN ON THE ‘MAGALHÃES’ AT SCHOOL, ACCORDING TO CHILDREN AND TEACHERS

		FREQUENTLY	NEVER
<b>Children</b>		Read and write texts	Send emails
		Do school exercises	Watch the news on the Internet
		Play games	Chat with friends/ family on the Internet
		Conduct a search on the Internet	Go to Facebook, MSN, Hi5, etc.
		Make Power Points	Write on my own or class blog
<b>Teachers</b>		Read and write texts	Go to Facebook, MSN, H5, etc.
		Conduct a search on the Internet	Chat with friends/ family on the Internet
		Do school exercises	Produce videos and films
		Play games	Watch the news on the Internet
		Make Power Points	Send emails

The activities listed in the ‘never’ column are the ones the respondents indicated as being the least often carried out by children either at

school or at home. Among them are mostly activities connected with the production of contents (writing on blogs, making videos or films), communication (chatting with friends and families, sending emails), checking out profiles on social networks and watching the news. It is worth mentioning that of the activities at home mentioned by children only 'writing on blogs' and 'watching the news on the Internet' have percentages well above 50%, around 70%. In other words, 74% of the girls and 73% of the boys reported that they never write on blogs and 70% of the girls and 61% of the boys said they watch the news on the Internet. As far as the latter activity is concerned, what is noteworthy is the 10% difference between boys and girls, which together with the fact that 17% of the boys mentioned they do it frequently as opposed to 11% of the girls may suggest that boys seem to be slightly more interested in news than girls.

The other three activities children report never doing at home have percentages slightly above 50%. There are only very slight differences according to gender when the frequency selected for those activities is 'never'. However, there are clearer differences when the answer is 'I do it frequently'. For example, going onto social networks is an activity which 52% of the girls and 48% of the boys never do, but, on the other hand, 30% of the girls say they do it frequently as do 37% of the boys. Also, producing videos is something 47% of the girls and 49% of the boys never do while it is done frequently by 22% of the females and 28% of the males.

The five activities children say they never do at school obtain much higher percentages than was the case at home. All the activities are mentioned by over 80% of the children, both by girls and boys. The option 'I do it frequently' for these activities obtains less than 10%; watching the news on the Internet, for example, has the lowest percentages as it is reported by only 5% of the girls and 6% of the boys as a frequent activity.

These findings clearly show that the 'Magalhães' is used much more often at home than at school as the children's answers are unequivocal as to the frequency with which they carry out certain activities in the two environments. In fact, there are higher percentages for the 'never do it'

option at school than at home; conversely the percentages are higher for the 'I do it frequently' option at home than at school.

The children's young age may explain the low frequency of these activities. Some require a certain level of autonomy and initiative which the children may not yet possess. Others may even be considered 'risky' for this age group, although it is necessary and important to strike a balance between the risks and the opportunities the digital media can offer. That balance may be achieved precisely through parental and teacher mediation. According to stipulations, to create a profile on a social network, namely on Facebook one would have to be at least 13 years old, which may, incidentally, help to explain the results. However, many children create their profile before that age, some with the help of older siblings or even their parents. In these cases, what is important is for the child to understand the opportunities this medium can offer but also to be aware of the risks the network presents and know what behaviour can be considered as risky and should therefore be avoided. Preparing and empowering children so they can deal with online (and other) environments should be part of children's education process and the family and the school are the main agents responsible for it. What we mean by this is that although some of the activities may be slightly premature or risky for these children's age group, they may also challenge youngsters' creativity and critical attitude. It all depends on how they are carried out, monitored and mediated.

If there was mass access to the 'Magalhães' giving every child the chance to have a computer, it would have been an opportunity to encourage other types of uses, both of the computer and the Internet, other than those which they already know, do and enjoy. More proactivity, particularly by schools might have made it possible to explore the potential of these media even further, contributing, thereby, to reduce social differentiation not only in terms of access, but also of use practices.

#### **5.4. Advantages and shortcomings of the 'Magalhães'**

In this last point, we would like to report on the children, parents and teachers' opinions on the potential advantages for 1st cycle school-children of the distribution of the 'Magalhães' computer. On the whole,

opinions are quite favourable although it is admitted that the governmental programme fell short of expectations based on the objectives that were set and there was criticism, particularly by parents, of the manner the initiative was managed and implemented.

Despite the constant equipment breakdowns which prevented children from using the 'Magalhães', they did mention many positive aspects the distribution of the computer had. We sought to generate a "word cloud" with some of the words or expressions the children used most often to describe the benefits that the 'Magalhães' brought to their lives.



**Figure 6:** "What benefits did the 'Magalhães' bring to your life?" – Words and expressions used by children

The word children most often use to describe the most important benefit they got from the computer is 'Learn' which they use in the broad sense or actually specify the type of learning they engaged in through the computer. However, the word 'nothing' is not too far behind, with some children explaining that computer breakdown did not allow

them to benefit much from it; others that they expected a better performance from the computer, and there are those who said 'nothing' simply because they could not fathom any benefits the computer may have brought to their lives. Other words that stand out are 'games' and 'personal computer', which is in line with what was discussed before about the importance of the 'Magalhães' for children. In fact, games and playing are greatly appreciated, as a good way to spend free time and also to have fun and to learn. The chance to have a computer that is 'only mine', in their words, is another feature which the children greatly appreciated, as mentioned earlier on in this chapter. Being the 'owners' of the equipment, using it when they please, not having to ask for permission or wait to use the computer provided children with a certain sense of autonomy and confidence in their ability to explore and use the computer on their own. Another word which frequently appears is 'the Internet', i.e., the possibility of accessing and surfing the Internet. But there are also words which express feelings: joy and happiness are used the most, particularly in connection with what it means to have a personal computer and with the activity they do the most on it: play.

Used less frequently are words such as 'search', 'study', 'write', 'homework' and 'talk to others'. In other words, much of what was said to be the objectives of the programme was not particularly valued by the children. The 'Magalhães' was mostly regarded as a medium to be used for their entertainment and fun rather than as a work and learning tool. These accounts also enable one to detect flaws the programme had both in its design and implementation. An initiative whose major concern is access to technology, neglecting other types of objectives and dimensions (selection, analysis, critical understanding and production, for example) has to be regarded as an incomplete project. We do not mean to say that it was not an important initiative, but we do believe that considering the human and financial resources invested in the programme, it should have offered its target groups other experiences and opportunities, particularly in terms of digital literacy competences, which are today regarded as fundamental to exercising citizenship (European Parliament and Council of the EU, 2006).

Undoubtedly, the emphasis of the programme was on access to technology, which is where some of the advantages mentioned by parents



and teachers derive from. For example, more than half of the teachers (56%) highlight the contribution made by the 'e.escolinha' programme towards reducing social inequalities among the children by allowing every student, regardless of socio-economic status, to have access to a computer. A significant number of parents (80%) also state that having access to and learning to use a computer was an advantage.

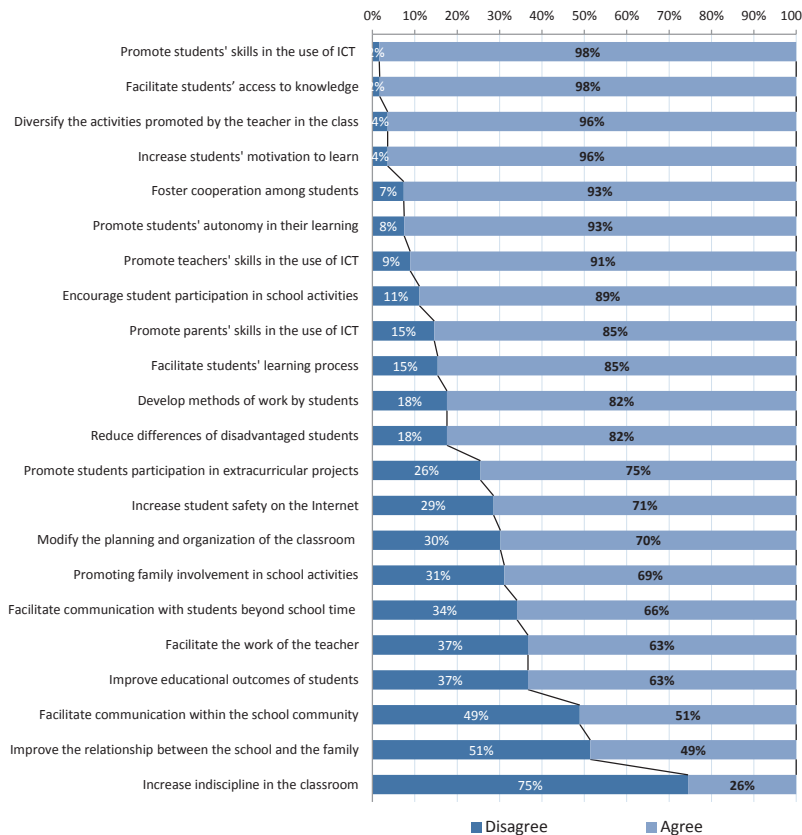
Despite the not very frequent use and the types of uses, 55% of the teachers (N=40) consider that the distribution of the 'Magalhães' contributed to the increase of the children's digital literacy levels, even though the remaining teachers either disagree or neither agree nor disagree. When asked about the dimensions they considered important for the development of the children's digital literacy, 'know how to protect yourself from possible risks' obtained 100% agreement. Other dimensions that obtained very high percentages, over 90%, were 'know how to use technology' (99%), 'have access to technology' (97%), 'know how to select and evaluate information' (96%) and 'read information critically' (95%). Close to these figures was the dimension 'develop competences which will enable them to have a higher skilled job' (89%). Less valued, but still with 70% of answers was "be able to produce digital contents' (70%). The teachers answers include the various dimensions that comprise the concept of media literacy set out in the European Commission Recommendation of 20 August 2009 (European Commission, 2009), even though they assign less importance to production than to access and to analysing and critically understanding messages. Therefore, since it is possible to conclude that the teachers are aware of what it entails to carry out work in this field, we draw the conclusion that when they state that the 'Magalhães' contributed towards increasing the children's digital literacy, they are referring above all to one dimension of the concept, i.e., access to technology.

In teachers' discourses there seems to be a mismatch<sup>15</sup> between how they evaluate the impact of the programme and how they describe

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15 Another mismatch was detected in discourses on teacher-training. On the one hand, they state it would have been fundamental for the government to have proposed training sessions for teachers together with the programme, which would prepare them for ICT use, namely the 'Magalhães', in classrooms, thereby indicating they lacked preparation in ICT use. But, on the other hand, when asked about the major constraint for the use of the 'Magalhães', training and pedagogic preparation are the factors which are least mentioned, while logistical and technical issues come up most often.

their classroom practices with the computer. Their evaluation is always much more positive than what they state was the case in terms of practice and then what was understood to have happened based on the children's and parents' questionnaires. This mismatch is also visible when cross-referencing the analysis of the question about the contributions made by the 'Magalhães' (Figure 7) with other questions such as the shortcomings of the computer's distribution programme, the factors constraining its use and aspects they would like to see changed if the 'Magalhães' were still being distributed to schools. The teachers are much more optimistic evaluating the contributions than when answering the other questions, as they criticise the manner in which the programme was designed and implemented. In general, the criticism would actually call into question some of the contributions mentioned in Figure 7 which got answers above 90%. Some of the issues that sparked criticism were: the lack of a pedagogical project to accompany the distribution of the computer (mentioned by 64%); the lack of teacher -training (57%); not taking account of the diversity of educational contexts (46%). The suggestions put forward relate to aspects that derive from difficulties encountered when using the computer. In order to improve this process, suggestions include: shoring up the technical support centres that assist schools in repairing breakdowns (79%); distributing the 'Magalhães' to all 1st cycle school teachers (71%) so they can become acquainted with and explore its contents; carrying out training sessions for teachers (67%); providing more specialised contents for teaching/ learning certain subjects (66%); keeping the computer at school instead of taking it home (62%).

Taking all these aspects in account, considering how the 'Magalhães' was not used or only used sporadically in classrooms as well as the narrow range of activities carried out with this computer, the question that remains is how it was nevertheless able to bring the benefits mentioned by the teachers which are shown in Figure 7.



**Figure 7:** Main contributions of the 'Magalhães' computer pointed out by the teachers (first published in Pereira, 2014, p. 227)  
**Source:** INQTEACHERS

As far as the advantages or shortcomings mentioned by the parents, the vast majority considered that the 'Magalhães' was useful for their children in that it enabled them to have a computer and to learn how to use it, much more than motivating or helping them with their school learning. On the whole, they have a favourable opinion on computers, stating advantages such as 'increasing knowledge in general', 'having a better future since jobs increasingly require the use of computers'. It is also true that they mention disadvantages, and among their concerns

are 'access to inappropriate content for children', 'dependence on technology' and 'taking time away from healthier pursuits'.

A significant percentage of the parents consider the 'Magalhães' has advantages over other computers, mentioning as examples, the fact it comes with educational programmes (78%), it being suitable for use by children (more resistant and lighter) (76%) and the fact it is portable enabling continuity of work between school and home (76%).

On the whole, parents take a positive view of the governmental initiative. Once again, the main benefit being that it allowed children to have access to a personal computer (mentioned by 74%). The fact that the programme contributed to reducing the disadvantages of underprivileged children and that it enabled families to have access to a computer are the advantages mentioned next most often, with 60% and 56% respectively. It is worth noting that practically half of the respondents (48%) disagree that it was an unnecessary expense, but 41% agree that it was a measure at odds with the reality of Portuguese schools, while 40% agree that it was, above all, government propaganda.

## 6. FINAL REMARKS

The 'e.escolinha' initiative and the 'Magalhães' distribution programme were presented in a scenario of fascination and wonder for technology and for the power that 'Magalhães' would have in revolutionizing the teaching and the learning process. The presentation of the programme to society was characterized by a certain technological utopia, giving the computer an intrinsic power of innovation and change.

The generalized distribution of the laptop 'Magalhães' to primary school children cannot be fully understood without a broader political economic approach. Indeed, in Portugal – like in most Western countries – successive governments (particularly since the XIII Portuguese Government) have developed the so-called Information Society policies in order to promote the intensive use of ICTs.

ICTs in general are bandwagons for the economy and serious attention has been paid to numerous initiatives to promote the commercialization and use of new technologies and new media. Although the distribution of the laptop had underlying economic and industrial objectives,

the political discourse regarding this initiative has been focused on the pedagogic potential of the computer which has caused some social outcry. In a country where basic needs have not been fulfilled in many schools, teachers, parents and other social actors have strongly voiced discontent regarding this expensive government' 'pedagogic' priority. In fact, this governmental programme has sparked off a great public debate in Portuguese society. Arguments in favour of and against the initiative had a significant expression in media, namely in the press (Pereira & Pereira, 2013; Melro, 2011). A columnist from a reference Portuguese newspaper expressed ironically how the Prime Minister was extolling the virtues of the computer:

The Prime Minister looks at the 'Magalhães' and sees information highways and communication bridges and, road metaphors aside, he sees a future which is the same as the present that other people are living abroad. Inside [Portugal], unfortunately, Portuguese people look at the Magellan and enact the fable of the ox and the palace (Gonçalves, 2009).

In this debate of pros and cons, Alice Vieira, a well-known Portuguese writer, redirects the discussion to what should be truly important in this debate, arguing that

If kids are not taught how to think, to conduct a search, to use a text as it should be, instead of just copying what they see on the screen - the 'Magalhães' is worth nothing (Vieira, 2009).

The uses of digital technology in education are not a new issue nor a consensual one. Almost three decades ago, Seymour Papert announced that computers would considerably transform education. In his first book, 'Mindstorms', written in 1980, Papert proposes that using computers provides a more motivating means of teaching areas like science and mathematics. In subsequent books (Papert, 1994, 1997), Papert continues emphasizing the importance of computers in education, criticizing the schools for resisting the challenges thrown by computers. These ideas are also shared by Nicholas Negroponte. In the book 'Being Digital' (1996), Negroponte explores the impact of digital technology on the world, explaining what being digital means and how

people's life could be enhanced by it. These perspectives emphasize the benefits of the computers' uses in education and are indeed very optimistic about computers in education. In Papert's case he criticises school, regarding it as an inefficient institution and considering that education will transform itself into a private process. But this perspective is centred on technology and devalues social interaction and social uses and practices around technology. The author looks at children as if they are all equal, presenting all a kind of innate skills and an intuitive knowledge to use computers.

These fervent points of view have been challenged by other ones that look suspiciously at technology in education. Neil Postman, for instance, refutes the 'technopoly', i.e., "the submission of all forms of cultural life to the sovereignty of technique and technology" (Postman, 1992, p. 52). His view, based on a strong technological determinism, conceives the media audience as an undifferentiated mass of people. Children, concretely, are seen as passive human beings, unprotected before the manipulation of the media. In his book 'The Disappearance of Childhood' (1982), Postman defends that the barriers between adults' world and children's world are being blurred and that this blurring is due to the cultural environment created by the media.

In recent years, more specific criticisms of children's uses of computers (and the Internet) have emerged from diverse domains. Therefore, computers are accused of promoting poor school performance (Dwyer et al., 2007), poor concentration, social isolation, the displacement of other activities (such as reading) and the deprivation of essential sensory and physical experiences. These criticisms and many others are presented in a report entitled "Fool's Gold: a critical look at computers in childhood" (Cordes & Miller, 2000). At the same time, other arguments have emerged considering that nowadays a learning environment without technologies will be out of step with student's own reality. The appropriate use of ICT is considered essential to develop independent learning skills and to foster social interaction and participation. Arguments for or against, what the huge number of publications on this topic show is that ICT, and its use in education, is a bigger issue without large consensus.

The theoretical perspectives that framed and substantiated this research project were those placed on an ecological perspective which takes into account individual, social and contextual factors that could enable or constrain the use of technology in education. Moreover there are macro questions, such as national and - global economics, which should also be addressed. The British researcher Neil Selwyn, currently professor in the Faculty of Education, Monash University, Australia, in his vast work on technology and education (see for instance Selwyn 2010, 2011, 2013, 2014) debates the use of digital technologies in educational settings and how schools are dealing with digital technology. Selwyn problematizes “the universalising nature of the discourses that have come to surround technology use in education (Selwyn 2013, p. ix) by addressing fundamental questions focused on technical, social and economic aspects. He gave particular attention to dimensions often disregarded in the Portuguese initiative: people, practices, contexts, structures and practices behind the use of technologies. Some problems within the ‘e.escolinha’ programme were actually related to the lack of attention to these dimensions. The governmental discourses embodied a form of technological determinism making believe that the ‘Magalhães’ computer would by itself solve the teaching-learning problems and contribute to the children’s school success, as these two quotations from the former Prime Minister and the former Minister of Education can illustrate:

When a ‘Magalhães’ enters a household, this household will never be the same. ‘Magalhães’ is a computer for all ages, it is a computer that does everything we need” (statement of the former Prime Minister to the news bulletin ‘Jornal da Tarde’, RTP - Public Television, October 23, 2008).

The programme is an overpowering means that can make everything change: it can make a child who has difficulties in learning how to read, learn faster and better. (statement of the former Minister of Education to the newspaper ‘Diário de Notícias’, September 22, 2009).

In an optimistic political discourse, children are seen as the discoverers of the present. As Fernão Magalhães in the XVI navigated through unknown oceans, children will use their ‘Magalhães’ computer

to explore new worlds and new oceans of knowledge. This is a beautiful image, but not all children are 'techno savvy' and the new conditions of education with computers also require new competencies and new literacies that children should develop. The digital divide is not just a question of access to technology – to have or not to have a computer, to be connected or not to the Internet. The fundamental divides are related with the modalities of meaning construction (Pinto, 2003) and how children are empowered to critically analyse and construct meanings. From a technology-driven perspective children can simply acquire media and digital skills without adult intervention or supervision. But “if they are to be full, active, creative, and ethical participants in this emerging participatory culture” (Jenkins 2006, p. 105) there are “a set of core social skills and cultural competencies that young people should acquire” (idem) and for this, teacher, parental or even peer mediation is fundamental. This reflection can be extended to the uses and the kind of activities children in our study developed through the 'Magalhães', either at school or at home. As we analysed, the set of activities performed by children was not very innovative or diversified. Children took few advantages of the potential benefits of the computer and the key point here is that they need the informed intervention of their educators to exploit the resources and the opportunities provided by digital technologies and to extend their prior experiences. For sure they can also explore and learn by themselves but if the objective is that they develop critical and creative competencies the adult support is essential.

The research project 'Navigating with Magalhães' was elaborated with a main assumption in mind - delivering computers to schoolchildren does not automatically lead to knowledge and learning. At the end of the study this assumption was confirmed and became a main conclusion. Digital technology could offer an important potential for education but, in this case, access to technology was merely instrumental. From the results of the study, we observe that this governmental policy was not consistently meaningful in the everyday of schools and in classroom contexts. The 'Magalhães' computer was not more effective than traditional methods in terms of involving and stimulating children in the learning processes because any technology motivates learners by itself.



As Buckingham states (2007), “the idea that digital technology will fundamentally transform education is obviously part of a bigger story” (p. 31). And to tell this ‘story’ we need to understand if policies are mostly centred on technology and its access or if their main centre are people – learners and educators – and their uses and life circumstances. We also need to be aware that this issue is not free of political substance and that it serves neo-liberal values. Selwyn (2014) pointed out that “over the past 30 years, technology-based education provision appears to have been reshaped along ever more individualistic and market-driven lines, working primarily to satisfy the demands of contemporary capitalism” (p. vii), and we need to think about this when we analyse or evaluate a technological policy for education. We also need to acknowledge that computers and other digital media are not neutral tools for learning and “yet it is only in the social contexts of use that technologies have any meaning” (Buckingham, 2007, p. 177).

We are not saying that this programme was not important and meaningful for children, schools and families. In fact, in some contexts it brought new practices into being. But the question is that it was far from achieving the aims promised when it was launched. We agree with Buckingham (2007) when he says that “there is frequently a significant gap between the imagination of policy makers – and of more academic accounts of educational technology – and the realities of teaching and learning (p. 30). Perhaps one problems of this policy is that it was mandated from the top to down, the opinions of schools administrators, teachers and even children’s opinions tended to be marginalized. Teachers were collaborators only for the administrative registration of children who wanted to acquire the computer. They weren’t involved in nor prepared to integrate one computer per child into the classroom. The initiative was not also preceded or accompanied by neither a pedagogic programme nor a teacher training plan. Using the words of Marçal Grilo, a former Minister of Education in the XIII Portuguese government (1995-1999), quoted from an interview he gave to a magazine of a national newspaper<sup>16</sup>, “no equipment by itself solves a problem if it is not at the service of a pedagogical project conducted by the school leader-

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16 In Revista 2, Jornal Público, February 16, 2014, p. 14.

ship and by teachers prepared to use such equipment". And this is the core point of all this discussion about the 'e.escolinha' programme.

The evidence from this study clearly shows that the use of the 'Magalhães' at school was sporadic and it was neither effective nor embedded in teachers' and classroom pedagogical practice<sup>17</sup>. The most common reasons cited by teachers for this underuse were logistical aspects. Difficulties that arise from work organisation and management and from teachers' training were less underlined, although in other questions our sample of teachers pointed out the lack of training as a major failure of the 'e.escolinha' programme. And in fact, the 'Magalhães' uses and the specific training for using this computer in the classroom revealed a dependency connection (at a confidence level of 95%), which means that teachers who had the opportunity to have training specifically on this topic were most ready to use the laptop (Pereira, 2014). In general, the number of years of teaching service does not influence how students use their 'Magalhães' computers in the classroom (idem).

With regard to the kind of uses and the activities, schools do not foster children's critical perspectives very much and do not stimulate creative opportunities to use the computer and specifically the 'Magalhães' laptop. The 'e.escolinha' programme played an important role throughout schools in equalizing children's access to technology, although we have seen that in this group in particular, the vast majority already had a computer at home. However, the role of schools and the role of a governmental programme such as this one should not only be to guarantee access but also to develop skills required to use it, which means acquiring forms of media literacy. Therefore, it is in this way that schools will likely to compensate for inequalities and give unprivileged children access to learning opportunities that they might otherwise not encounter at home or elsewhere.

When it comes to the context of home, the 'Magalhães' seems to be more often used by children than at school, despite the huge number of damaged computers. Although many parents acquired the 'Magalhães'

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<sup>17</sup> For a more detailed analysis of the 'Magalhães' uses at school and how teachers deal with it in the pedagogical practice, see Pereira, 2014.

computer in order to support their children's education and school learning process, the laptop was not mostly used for these purposes.

The activities performed in this context were also limited and not very diversified, with games dominating the uses at home. Internet searches were another activity reported by children and by parents but we do not have enough information about how it is done and it is very important that this search does not mean a copy-paste of the first results found. This will not revert into knowledge for children. The use of the computer and the Internet for communicating, chatting and interacting with friends and members of the family is not yet something that children are engaged in, unlike the results of other studies, one involving Portuguese young people (Ponte, 2012) and the other with the same age group (Selwyn, 2010). This can happen in fact due to the younger age of the children but it could also be a question of social and cultural context.

In general, the surveyed parents were conscious of the role played by technologies in today's society. They were willing to invest in computers to secure their children's success and to assure their preparation for the labour market. In the case of the 'Magalhães', parents bought the computer believing it would be used in a different way at school and because they didn't want their children to be left behind, although the majority had at least one computer at home. The discourses saying that the computer was for all primary school children and that it was important that every child had a laptop, could have led parents to believe in the need to invest in one.

In the contemporary globalised society, technology is not only an educational, social and cultural issue. It is - and perhaps more prominently - a political and an economic affair. Even within the educational side of technology we have to read its ideological dimensions. According to Selwyn (2011) "the apparent 'clash' between educational technology policy and educational technology practice does not necessarily represent a failure of policy-makers to 'understand' schools and digital technology. Rather, policy-makers may well not have developed such policies and initiatives with purely 'educational' intentions in mind" (p. 59). We are not saying that the Portuguese programme did not have educational intentions behind it but the evidence from the data of this specific study

is that digital media literacy objectives were completely marginalized. In our view, media education or media literacy could have provided a conceptual framework for this initiative. This could have been an excellent opportunity to promote media literacy at a national level, empowering children to understand, analyse and critique technologies and media and creatively produce their own contents. This will enable schools to respond to the increasing role of media in society and in children's lives.

## Acknowledgements

This chapter is part of a research project named “Navigating with ‘Magalhães’: Study on the Impact of Digital Media in Schoolchildren”, carried out between May 2010 and May 2013 at the Communication and Society Research Centre, University of Minho. It was funded by FCT - Fundação para a Ciência e a Tecnologia (Portuguese Foundation for Science and Technology) and co-funded by FEDER – Fundo Europeu de Desenvolvimento Regional (ERDF: European Regional Development Fund) through COMPETE - Programa Operacional Factores de Competitividade (Operational Competitiveness Programme). Project reference: FCT: PTDC/CCI-COM/101381/2008 | COMPETE: FCOMP-01-0124-FEDER-009056.

We would like to express our many thanks to the school communities and the schools from the municipality of Braga (Portugal) that agreed to cooperate with the project ‘Navigating with Magalhães’. Our best thanks to all children, parents and teachers who collaborated in the study.

We are also very grateful to the key actors who agreed to be interviewed, enlarging thereby the discussion about ICT, in particular the Magalhães computer, in education.

All these contributions were really valuable to the success of the research project.

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## APPENDIX A

**TABLE 1:** Frequency of activities performed on the ‘Magalhães’ laptop at home and at school, reported by children

	NEVER				RARELY				FREQUENTLY			
	SCHOOL		HOME		SCHOOL		HOME		SCHOOL		HOME	
	N	%	N	%	N	%	N	%	N	%	N	%
<b>Download music, movies, games</b>	327	68,6	381	45,0	104	21,8	274	32,3	34	7,1	192	22,7
<b>Draw</b>	145	30,2	182	20,9	249	51,9	410	47,1	84	17,5	279	32,0
<b>Edit images and photos</b>	211	43,9	255	29,9	177	36,8	308	36,1	85	17,7	291	34,1
<b>Write on blogs</b>	343	71,5	586	73,3	75	15,6	125	15,6	30	6,3	88	11,0
<b>Talk to friends or family on the Internet</b>	387	81,0	404	47,5	44	9,2	173	20,4	46	9,6	273	32,1
<b>Do school exercises</b>	68	14,1	319	37,4	150	31,2	288	33,8	261	54,3	245	28,8
<b>Do an Internet search</b>	251	52,5	245	28,8	97	20,3	201	23,6	125	26,2	404	47,5
<b>Make Power Points</b>	225	47,4	331	42,8	107	22,5	225	29,1	112	23,6	218	28,2
<b>Go to social networks</b>	373	80,0	409	49,9	29	6,2	141	17,2	48	10,3	269	32,8
<b>Play games</b>	100	21,0	29	3,4	174	36,6	183	21,2	200	42,0	653	75,5
<b>Read and write texts</b>	41	8,6	161	18,9	152	31,9	336	39,4	284	59,5	355	41,7
<b>Send emails</b>	384	81,7	467	55,3	37	7,9	185	21,9	40	8,5	193	22,8
<b>Listen to music</b>	247	52,7	163	18,9	127	27,1	258	30,0	94	20,0	440	51,1
<b>Share photos, videos or music</b>	295	62,1	427	49,9	110	23,2	224	26,2	69	14,5	204	23,9
<b>Produce videos and movies</b>	309	65,3	407	48,2	100	21,1	230	27,3	53	11,2	207	24,5
<b>Use the computer's camcorder</b>	242	51,2	235	27,5	155	32,8	332	38,9	76	16,1	287	33,6
<b>Watch the news on the Internet</b>	390	81,6	556	65,5	58	12,1	173	20,4	27	5,6	120	14,1
<b>Watch videos and movies</b>	281	58,5	275	32,6	121	25,2	256	30,4	78	16,3	312	37,0



**TABLE 2:** Frequency of activities performed on the ‘Magalhães’ laptop at school, reported by teachers

	NEVER		RARELY		FREQUENTLY	
	N	%	N	%	N	%
<b>Download music, movies, games</b>	23	69,7%	5	15,2%	3	9,1%
<b>Draw</b>	3	8,3%	23	63,9%	6	16,7%
<b>Edit images and photos</b>	9	24,3%	18	48,6%	7	18,9%
<b>Write on blogs</b>	18	54,5%	7	21,2%	5	15,2%
<b>Talk to friends or family on the Internet</b>	25	75,8%	4	12,1%	2	6,1%
<b>Do school exercises</b>	0	0,0%	16	45,7%	17	48,6%
<b>Do an Internet search</b>	6	16,2%	9	24,3%	20	54,1%
<b>Make Power Points</b>	10	29,4%	14	41,2%	8	23,5%
<b>Go to social networks</b>	26	83,9%	2	6,5%	0	0,0%
<b>Play games</b>	6	17,1%	18	51,4%	10	28,6%
<b>Read and write texts</b>	0	0,0%	6	14,0%	36	83,7%
<b>Send emails</b>	22	68,8%	5	15,6%	1	3,1%
<b>Listen to music</b>	13	37,1%	16	45,7%	4	11,4%
<b>Share photos, videos or music</b>	16	45,7%	11	31,4%	4	11,4%
<b>Produce videos and movies</b>	25	69,4%	5	13,9%	1	2,8%
<b>Use the computer’s camcorder</b>	16	45,7%	12	34,3%	3	8,6%
<b>Watch the news on the Internet</b>	20	62,5%	7	21,9%	2	6,3%
<b>Watch videos and movies</b>	15	44,1%	13	38,2%	3	8,8%

**TABLE 3:** Frequency of activities performed on the 'Magalhães' laptop at home, reported by parents

	NEVER		RARELY		FREQUENTLY	
	N	%	N	%	N	%
<b>Download music, movies, games</b>	560	65,7%	214	25,1%	70	8,2%
<b>Draw</b>	101	11,5%	448	50,8%	329	37,3%
<b>Edit images and photos</b>	244	28,4%	367	42,7%	241	28,0%
<b>Write on blogs</b>	677	79,7%	111	13,1%	38	4,5%
<b>Talk to friends or family on the Internet</b>	526	61,1%	172	20,0%	163	18,9%
<b>Do school exercises</b>	217	24,6%	439	49,8%	224	25,4%
<b>Do an Internet search</b>	261	29,9%	240	27,5%	369	42,3%
<b>Make Power Points</b>	433	51,1%	239	28,2%	143	16,9%
<b>Go to social networks</b>	562	65,0%	140	16,2%	157	18,2%
<b>Play games</b>	29	3,2%	257	28,7%	606	67,7%
<b>Read and write texts</b>	103	11,8%	443	50,8%	323	37,0%
<b>Send emails</b>	603	70,5%	181	21,2%	64	7,5%
<b>Listen to music</b>	225	25,7%	314	35,8%	337	38,5%
<b>Share photos, videos or music</b>	558	64,9%	202	23,5%	96	11,2%
<b>Produce videos and movies</b>	633	74,5%	149	17,5%	64	7,5%
<b>Use the computer's camcorder</b>	363	42,3%	356	41,4%	139	16,2%
<b>Watch the news on the Internet</b>	601	70,0%	182	21,2%	73	8,5%
<b>Watch videos and movies</b>	443	51,3%	270	31,3%	150	17,4%

**TABLE 4:** Activities performed on the 'Magalhães' laptop at school by gender, reported by children

	GENDER					
		FEMALE		MALE		VALUE-P
		N	%	N	%	
<b>Download music, movies, games</b>	Never	171	69,8%	155	70,8%	p<0,05
	Rarely	62	25,3%	42	19,2%	
	Frequently	12	4,9%	22	10,0%	
	Total	245	100%	219	100%	
<b>Draw</b>	Never	73	29,4%	71	31,1%	n.s.
	Rarely	133	53,6%	115	50,4%	
	Frequently	42	16,9%	42	18,4%	
	Total	248	100%	228	100%	
<b>Edit images and photos</b>	Never	105	42,5%	104	46,4%	n.s.
	Rarely	101	40,9%	76	33,9%	
	Frequently	41	16,6%	44	19,6%	
	Total	247	100%	224	100%	
<b>Write on blogs</b>	Never	184	80,0%	157	72,7%	n.s.
	Rarely	33	14,3%	42	19,4%	
	Frequently	13	5,7%	17	7,9%	
	Total	230	100%	216	100%	
<b>Talk to friends or family on the Internet</b>	Never	205	82,0%	180	80,0%	n.s.
	Rarely	22	8,8%	22	9,8%	
	Frequently	23	9,2%	23	10,2%	
	Total	250	100%	225	100%	

<b>Do school exercises</b>	Never	27	10,7%	40	17,9%	p<0.05
	Rarely	78	30,8%	72	32,1%	
	Frequently	148	58,5%	112	50,0%	
	Total	253	100%	224	100%	
<b>Do an Internet search</b>	Never	127	51,8%	123	54,4%	n.s.
	Rarely	53	21,6%	44	19,5%	
	Frequently	65	26,5%	59	26,1%	
	Total	245	100%	226	100%	
<b>Make Power Points</b>	Never	109	48,2%	115	53,0%	n.s.
	Rarely	61	27,0%	46	21,2%	
	Frequently	56	24,8%	56	25,8%	
	Total	226	100%	217	100%	
<b>Go to social networks</b>	Never	196	83,8%	175	81,8%	n.s.
	Rarely	16	6,8%	13	6,1%	
	Frequently	22	9,4%	26	12,1%	
	Total	234	100%	214	100%	
<b>Play games</b>	Never	46	18,4%	52	23,4%	n.s.
	Rarely	103	41,2%	71	32,0%	
	Frequently	101	40,4%	99	44,6%	
	Total	250	100%	222	100%	
<b>Read and write texts</b>	Never	19	7,6%	21	9,3%	n.s.
	Rarely	80	32,1%	72	31,9%	
	Frequently	150	60,2%	133	58,8%	
	Total	249	100%	226	100%	
<b>Send emails</b>	Never	200	85,5%	182	80,9%	n.s.
	Rarely	18	7,7%	19	8,4%	
	Frequently	16	6,8%	24	10,7%	
	Total	234	100%	225	100%	

<b>Listen to music</b>	Never	122	50,0%	123	55,4%	n.s.
	Rarely	73	29,9%	54	24,3%	
	Frequently	49	20,1%	45	20,3%	
	Total	244	100%	222	100%	
<b>Share photos, videos or music</b>	Never	152	62,0%	141	62,1%	n.s.
	Rarely	61	24,9%	49	21,6%	
	Frequently	32	13,1%	37	16,3%	
	Total	245	100%	227	100%	
<b>Produce videos and movies</b>	Never	159	67,4%	148	66,1%	n.s.
	Rarely	50	21,2%	50	22,3%	
	Frequently	27	11,4%	26	11,6%	
	Total	236	100%	224	100%	
<b>Use the computer's camcorder</b>	Never	118	47,6%	122	54,7%	n.s.
	Rarely	86	34,7%	69	30,9%	
	Frequently	44	17,7%	32	14,3%	
	Total	248	100%	223	100%	
<b>Watch the news on the Internet</b>	Never	206	83,4%	183	81,0%	n.s.
	Rarely	28	11,3%	29	12,8%	
	Frequently	13	5,3%	14	6,2%	
	Total	247	100%	226	100%	
<b>Watch videos and movies</b>	Never	140	55,6%	139	61,5%	n.s.
	Rarely	74	29,4%	47	20,8%	
	Frequently	38	15,1%	40	17,7%	
	Total	252	100%	226	100%	

**TABLE 5:** Activities performed on the 'Magalhães' laptop at home by gender, reported by children

	GENDER					VALUE-P
	FEMALE		MALE			
	N	%	N	%		
<b>Download music, movies, games</b>	Never	208	47,5%	171	42,3%	p<0.05
	Rarely	151	34,5%	122	30,2%	
	Frequently	79	18,0%	111	27,5%	
	Total	438	100%	404	100%	
<b>Draw</b>	Never	59	13,0%	122	29,7%	p<0.05
	Rarely	221	48,7%	186	45,3%	
	Frequently	174	38,3%	103	25,1%	
	Total	454	100%	411	100%	
<b>Edit images and photos</b>	Never	107	24,3%	146	35,9%	p<0.05
	Rarely	172	39,0%	134	32,9%	
	Frequently	162	36,7%	127	31,2%	
	Total	441	100%	407	100%	
<b>Write on blogs</b>	Never	295	73,8%	285	72,5%	n.s.
	Rarely	66	16,5%	59	15,0%	
	Frequently	39	9,8%	49	12,5%	
	Total	400	100%	393	100%	
<b>Talk to friends or family on the Internet</b>	Never	213	48,2%	189	47,0%	n.s.
	Rarely	93	21,0%	77	19,2%	
	Frequently	136	30,8%	136	33,8%	
	Total	442	100%	402	100%	
<b>Do school exercises</b>	Never	150	33,9%	167	41,4%	n.s.
	Rarely	158	35,7%	126	31,3%	
	Frequently	135	30,5%	110	27,3%	
	Total	443	100%	403	100%	

<b>Do an Internet search</b>	Never	128	29,1%	114	28,2%	n.s.
	Rarely	112	25,5%	88	21,8%	
	Frequently	200	45,5%	202	50,0%	
	Total	440	100%	404	100%	
<b>Make Power Points</b>	Never	153	39,3%	175	46,2%	n.s.
	Rarely	113	29,0%	110	29,0%	
	Frequently	123	31,6%	94	24,8%	
	Total	389	100%	379	100%	
<b>Go to social networks</b>	Never	217	51,5%	189	48,2%	n.s.
	Rarely	80	19,0%	59	15,1%	
	Frequently	124	29,5%	144	36,7%	
	Total	421	100%	392	100%	
<b>Play games</b>	Never	13	2,9%	15	3,7%	p<0.05
	Rarely	115	25,6%	66	16,1%	
	Frequently	321	71,5%	329	80,2%	
	Total	449	100%	410	100%	
<b>Read and write texts</b>	Never	53	12,0%	107	26,5%	p<0.05
	Rarely	182	41,2%	154	38,1%	
	Frequently	207	46,8%	143	35,4%	
	Total	442	100%	404	100%	
<b>Send emails</b>	Never	249	57,1%	216	53,6%	n.s.
	Rarely	94	21,6%	88	21,8%	
	Frequently	93	21,3%	99	24,6%	
	Total	436	100%	403	100%	
<b>Listen to music</b>	Never	67	15,0%	95	23,2%	p<0.05
	Rarely	156	35,0%	100	24,4%	
	Frequently	223	50,0%	214	52,3%	
	Total	446	100%	409	100%	

<b>Share photos, videos or music</b>	Never	217	49,2%	206	50,5%	n.s.
	Rarely	124	28,1%	100	24,5%	
	Frequently	100	22,7%	102	25,0%	
	Total	441	100%	408	100%	
<b>Produce videos and movies</b>	Never	203	46,9%	200	49,3%	p<0.05
	Rarely	137	31,6%	93	22,9%	
	Frequently	93	21,5%	113	27,8%	
	Total	433	100%	406	100%	
<b>Use the computer's camcorder</b>	Never	103	23,0%	130	32,3%	p<0.05
	Rarely	193	43,2%	137	34,1%	
	Frequently	151	33,8%	135	33,6%	
	Total	447	100%	402	100%	
<b>Watch the news on the Internet</b>	Never	309	70,2%	244	60,5%	p<0.05
	Rarely	82	18,6%	90	22,3%	
	Frequently	49	11,1%	69	17,1%	
	Total	440	100%	403	100%	
<b>Watch videos and movies</b>	Never	146	33,4%	126	31,5%	p<0.05
	Rarely	153	35,0%	101	25,3%	
	Frequently	138	31,6%	173	43,3%	
	Total	437	100%	400	100%	