MOMINÓ, J. M.; BADIA, A. ; MENESES, J.; SIGALÉS, C. (2007). "La integración de Internet en la educación escolar española: situación actual y perspectivas de futuro". En: IV Congreso Internacional de Educared. Fundación Telefónica. Madrid. 29 de noviembre.

Executive summary

The main objectives and findings of this first research report are presented in this chapter.

"The Implementation of the Internet in the Spanish Education System: State of Affairs and Future Prospects" is a large-scale research project that seeks to obtain relevant data about the introduction and dissemination of Information and Communication Technology, particularly the internet, in the practical and organizational general procedures of the Spanish schools and high schools.

The project articulates the processes of ICT implementation on the primary and secondary education levels embracing a holistic approach, propped up by an empirical and analytical research methodology. Thus, our survey does not intend to detect which is the impact of ICT on school activities but how all the agents involved in the school community incorporate ICT and what use they make of it. We are especially interested in identifying the teachers' pedagogical and professional uses of ICT, how students use it in their activities and to what extent it contributes in reinforcing teamwork and participation proceedings in the institutions, as well as the relations between the latter and their context. It is also of our interest to know the factors that exert the strongest influence on the way teachers, head teachers and students make use of ICT. Finally, we intend to identify the ways ICT may contribute to the improvement of educational practices.

The process of data collection was systematized by a large-scale questionnaire survey – 17,576 questionnaires have been processed. We have dealt with a representative institution sample drawn from compulsory primary and secondary schools located in all the Spanish autonomic regions (*comunidades autónomas*), interviewing teachers, students and head teachers on a thorough, systematic basis. The data collected have allowed us to identify priorities, needs and preoccupations from the different components of the school community; also, such data informed us about the main educational and organizational practices carried out in the Spanish schools and high schools and, in that context, the role played by the internet and ICT; the degree of implementation of the technology in the school activities; and finally, according to those involved, the conditions that facilitate such procedures, as well as those that hinder the largest advancements.

The following subsection presents the key findings obtained and incorporated in this first research report.

3.1. Findings with regard to resources, skills and educational ICT use considerations

The head teachers, teachers and students of Spanish schools and high schools are highly familiarized with ICT, they use it regularly in their daily activities and their level of digital literacy, all of which are dramatically higher than the average Spanish levels. 87.5% of head teachers, 77% of teachers and more than half the students (57.7%) have a web surfing experience of three years or longer. The percentage of people having developed the basic skills to use computers and the internet is higher than 90% among head teachers, approximately 85% among teachers and nearly 80% of students from the age ranges analysed (11 – 12 and 15 – 16)

However, the teachers' specific ICT skills applied in the teaching and learning processes reveal a noticeably lower level of development. With regard to their own estimations, less than half the teachers (43.7%) consider their teaching ICT skills allow them to obtain the high educational potential of such technologies. Even though a great majority (82%) consider themselves highly capable to find materials on the internet to prepare their lessons, a mere 61.4% would be able to identify the most appropriate teaching and learning contexts in which ICT may be used. Finally, only a minority has the ability to develop multimedia projects and use them with students, to supervise online work teams or to create digital materials useful for their subjects.

Home computer availability and internet access is widespread among members of the school community. The presence of computers in the head teachers' homes is virtually universal: 98.2% claim to own at least one computer at home and 91.5% have an internet connection. Among teachers, percentages are 96.8% and 84.9% respectively. With regard to students, 87.7% have at least one computer at home and 70.3% have access to an internet connection.

Spanish schools and high schools have started to present an appreciable degree of connectivity and a remarkable volume of technological resources, which is well regarded by most teachers and particularly by a large amount of head teachers. 79.3% of the head teachers and 58.4% of the teachers think that the availability of internet-

connected computers in their schools facilitates the frequent use of such technologies. On the other hand, three quarters of the institutions have an assigned teacher in charge of the ICT technical support for their colleagues (73.4% of cases) and in a lesser percentage of them (57.2%) there is one that provides educational orientation with respect to the use of the technologies.

In relation with the educational application of ICT analysed by our study (compulsory primary and secondary education), Spanish schools and high schools display an average ratio of 7.52 students per computer. The average ratio of students per internet-connected computer at the mentioned education stages is 8.32. Approximately 90% of schools and high schools have a broad-band internet connection, virtually all of them using ADSL.

In spite of the ratios provided above, which present relatively low levels, the schools and high schools still present important limitations concerning availability and access to ICT resources, when comparing them to data collected three and five years earlier and the degree of connectivity achieved. On the one hand, in most schools and high schools internet-connected computers are located in specific classrooms away from spaces where students usually work. Only 13.4% of them feature a minimum of 10 computers distributed among regular classrooms. On the other hand, less than half the teachers have access to an overhead digital projector, only 1 out of 3 schools has a Wi-Fi zone granting internet access from the classrooms, and only 15.4% of teachers have access to an interactive whiteboard. This kind of limitations puts seriously at stake the habitual use of ICT with students in the classroom.

From a technological point of view, the communication ICT uses experience the most important restrictions in schools and high schools. Although most schools and high schools (55.8%) own an intranet, only one fifth of such networks can be accessed from outside the building. Students are the ones that suffer the most sever consequences caused by a lack of communication resources availability. Only one out of five students is provided with an e-mail account by the school with which to contact teachers and fellow students. Approximately 10% of students can access school subject websites or blogs and still fewer (7.7%) have access to a virtual classroom where they can work in teams and have access to online resources.

Leaving aside the availability of technological resources, a great majority of head teachers and teachers (more than 90%) of Spanish schools and high schools concede

a high degree of importance to the potential of ICT as an educational tool. Furthermore, three out of four students are of the opinion that the acquisition of digital skills is an essential requirement in their studies and it will be necessary for them to enter the job market.

Among teachers and head teachers, we can identify two well-differentiated opinions: those who regard ICT as a tool that contributes to the improvement of quality and efficacy in the established working procedures, and those who essentially regard them as innovation tools. Only about 5% of both groups consider that the role of ICT in education should be limited.

However, when asked to identify the chief purpose of the use of digital technology in the classroom – both in the teaching and learning processes – the opinions of teachers and head teachers change. Only a third of both groups consider it a tool to be used for the innovation of teaching and methodology activities.

In fact, a majority of teaching and management staff have noticed important imbalances between the demands of the established curriculum and the most widespread teaching methodologies, on the one hand, and what ICT may offer from an educational point of view, on the other. Only 36.8% of the teachers think that the functional features of ICT and the type of activities they may encourage are well-adapted to the curriculum and teaching priorities established by the school. Yet, only 36.6% of the head teachers consider that those priorities encourage teachers to opt to use ICT. No more than 30% of them think that the teaching and educational resources that ICT may provide are well-adapted to the way teachers ordinarily impart their lessons.

Apart from these perceptions of imbalance between the priorities established by the curriculum, the teaching procedures and the educational potential of the technology, a large section of the school community does not consider that the use of ICT as a teaching and learning tool may improve the student's performance. Thus, 41.1% of the head teachers and only 30.3% of the teachers acknowledge an improvement in the student's performance as a result of the implementation of ICT. Nevertheless, students are the most sceptical about such improvement. A mere 16% claim to have obtained better grades on account of their use of ICT.

3.2. Frequency and main characteristics of school and high school ICT uses

With regard to head teachers, ICT is being used with a reasonable relevance in 62.3% of schools and high schools. There is a scarce or irrelevant ICT use applied to the teaching procedures in the rest. ICT is massively used in specific administrative and managerial tasks (in 98.4% of them) and to a large extent in the preparation and scheduling of lessons by teachers (approximately 90% use it for that purpose). There is a large rate of ICT use among students (3 out of 4) when researching for their school assignments.

However, the presence of ICT in teaching and learning activities is much less frequent, more particularly in the classrooms where teachers and students usually carry out their normal occupations. Only one out of three primary and compulsory secondary education students[1] uses computers on a regular basis (more than once a week) to work on his / her school subjects. Computers are occasionally or scarcely present in the school activities carried out by the rest, or they are simply never used. When paying attention to the use of the internet, the frequency is lower yet. Only one out of five uses it regularly and one out of three never does.

With regard to teaching staff, 28.5% claim they never use ICT with the students of the group selected and only one out of four teachers considers him / herself a regular ICT user while in class with their students. Among teachers who use ICT with their students (71.5%), the average time is 4.54 hours per month.

ICT is mostly used as a tool to support the teachers' tasks, chiefly in the processes involving the dissemination of contents, whether as a complement to the conventional oral presentations (78.7% of those who use them) or by means of the presentation of multimedia materials (62.3%). The students also use ICT, mainly when researching or accessing information related to subject contents (89.5% of those who use them), and then when writing (84%) and doing homework (69%).

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[1] In order to comment on the frequency of ICT use in the classroom we used information provided by students because we consider that theirs is a wider view on the matter than that of teachers. Thus, the former informed us about the frequency of use in all the subjects as a whole, while the latter informed only about the specific subjects they were teaching at the moment.

Among teachers, the use of ICT to guide the students' learning processes and help them in their own construction of knowledge is less frequent (57.5% of those who use them). Teachers use ICT to strengthen communication through technological means in a much lower proportion: to communicate with the students in an asynchronous way and by writing (26% of those who use them), to develop a virtual classroom (19.9%) or to organise teamwork (19.6%).

Regardless of the frequency and variety of ICT uses, educational innovation is not the main aim of the implementation of these technologies in schools. Most of the teachers who use ICT in class admit they have implemented it mainly as a support to teaching activities they already carried out (68.3%). A mere 17.5% of the teachers claim to have adopted ICT to introduce important changes in the way they teach and they assign tasks to their students. Only 13.7% of the head teachers admitted projects were being carried out by means of ICT to change essential aspects in the way their schools or high schools function. Similarly, when head teachers commented on the priorities in the implementation of ICT, the less frequent (27.5% of the schools and high schools where such priorities were considered) was the implementation of these technologies to change the general educational aims of the school or high school.

3.3 Differences by population segments

Apart from the data provided in relation to the average ICT use in schools and high schools it is necessary to point out the great variability among them as regards their degree of technological equipment. Public schools and high schools are visibly better equipped than private ones[2] and they benefit from a higher degree of connectivity. Among public institutions, secondary schools and high schools are the best equipped of all.

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[2] In this report, unless the opposite is stated, when we discuss private institutions we will always refer to institutions belonging to such legal category, regardless of their having public funding agreements established with the administration or not. We must take into account, however, that the vast majority of private institutions that participated in the survey have such public funding agreements, similarly to what happens in the total population that has been sampled.

Geographically speaking – leaving aside a discussion concerning the differences among the autonomic regions (*comunidades autónomas*), which are not the object of study in this first report – schools and high schools located in big cities (more than 500,000 inhabitants) appear to profit from the highest internet-access quality and degree of connectivity.

Students enjoying better internet connection opportunities, the most ICT resources available in their homes and a longer experience in the use of the latter, study in private high schools located in big cities. Thus, we must still point out that a 29.1% of primary students, mainly from public schools, never access the internet from their homes, due to either their lacking an internet access or the necessary skills to make use of one.

Secondly, we have found significant differences among the population surveyed with regard to the necessary skills to make an instrumental use of ICT. The most persistent differences are found among head teachers, teachers and students according to their age and gender. Head teachers, younger teachers and older students feature a higher level of sophistication in their ICT instrumental use skills.

Older and female teachers consider themselves to have a lower degree of ICT skills development and a lesser experience in its use. These differences, in relation to age and gender, apply to a fair amount of the aspects analysed in this survey. Older and female teachers hold the worst opinion about the value of ICT in education and they admit having the greatest difficulties to implement them in their educational practices.

The mentioned low training level and expectations stand for a less frequent and varied ICT use in their non-teaching professional practices. Further, we may find a significantly higher proportion of female teachers and teachers over 50 among the teaching staff members who never use ICT in the classroom. However, among the teachers that use ICT with their students, we have not found significant usage differences [3] neither between younger and older teachers, nor between male and female teachers.

We also consider worth being mentioned the fact that the gender differences we have detected among the teachers are not replicated by the students. There are not relevant

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[3] Using as reference the amount of hours per month that teachers use internet-connected computers with the selected class group.

differences between male and female students according to their experience, use and digital skills, and if they are found, they do not always favour male students.