VOCATIONAL TEACHING: USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES BY STUDENTS IN THE CLASSROOM

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Abstract

This article presents the main results of a study about the use that students of vocational courses related to Information and Communication Technologies (ICT) make of ICT in the classroom. The application of a questionnaire, in the classroom, to 314 students from 4 public and private schools, had as objective to verify what technological equipment is available in the classroom, the frequency of access and use of ICT, the activities carried out using technologies and the degree of the students' confidence in their use. The main results of the study show that the students’ access to the computer in the classroom is almost daily, with differences of significant use between the subjects of the technical component, where its use is a common practice, and the subjects of the sociocultural and scientific components, where the use is limited. The students reveal practices of using ICT that are not very enriching and innovative in the process of teaching and learning, where the computer with internet access remains almost exclusively the technological equipment used in the classroom. Confidence in the execution of tasks with the use of technologies is greater in tasks that are less demanding and less complex and that students usually perform more frequently in the classroom. It is therefore imperative to make the use of ICT in the classroom a common but enriching practice that produces effective gains in student learning and makes them an effective response as ICT specialists for the job market.

Keywords: Use; Information and Communication Technology; Students; Vocational Education.

1 INTRODUCTION

The progressive spread of Information Communication Technologies (ICT) has brought new directions to the economy, society, culture and, above all, education. The use of ICT in young people’s learning has been supported by the Ministry of Education, through equipping and modernizing the technological park of schools and teacher training.

The operation of ICT courses implies the use and integration of these technologies in the teaching and learning processes, in order to achieve the objectives and competences foreseen in these courses. Thus, it is important to evaluate the way these processes take place and the effective use made of the equipment and technological means, since quantity does not necessarily mean good use practices, neither does it require its use or informs us about the changes that can occur in learning and teaching.

The development of a knowledge-based society depends on the integration of information and communication technologies in the institutions (companies, public administration and service providers, third sector), but for this integration to be carried out, graduate and postgraduate training are necessary in ICT. It is at this point that ICT professional courses can play a pivotal role in the sense that they can match the needs of institutions.

In this context, there is a need to carry out an investigation into the way in which students of ICT vocational courses, both in public and private education, use and integrate pedagogically these technologies into the learning process.

In this paper we present the results of a study developed in four schools in the country, two public and two private schools, with 314 students of vocational courses in the field of ICT on their use of new technologies in the school inside the classroom and discussion of this data in dialogue with the literature review.
2 METHODOLOGY

To carry out this study on the use of ICT in the classroom, a questionnaire survey was applied to 314 students of vocational courses in the scope of ICT, distributed over the three curricular years (10th year - 45.5%; 11th year (32.5%, 12th year - 22% students) from four schools, two from public and two from private schools.

The questionnaire survey was validated by the Direção-Geral da Inovação e Desenvolvimento Curricular (DGIDC) in February 2012, and later applied to the Escola Profissional de Setúbal, Externato Cooperativo da Benedita, Escola Secundária Rafael Bordalo Pinheiro and Escola Secundária de Pombal, during the students' classes.

The purpose of the survey was to quantitatively record sociodemographic, infrastructural, representational and practical aspects of ICT use both inside and outside the classroom, as well as in students' personal lives.

3 RESULTS

In this section the description of the results obtained in the study on the use of ICT by students in the classroom is described.

3.1 Access and use of ICT in the classroom

Most students have used the computer at school for more than four years, so their initiation took place even in elementary school. Almost 40% of students report using computers at school for four to six years, and this time is even higher for 29.3% of respondents.

For 94.6% of the students, the use of the computer with Internet access in the classroom is a reality, which is explained by the technical component of the courses, which involves the use of the computer. Asked about how often they do it in the classroom, 68.5% report that their use is daily or almost, while only 24.5% say that it happens only a few times a week.

In spite of the courses, the investment in the use of the computer and internet in the classroom in subjects of the sociocultural and scientific component is reduced. Only in the technical subjects of the courses there is a significant use of ICT.

In Multimedia, Audiovisuals, Representation and Digital Technologies and Project, 75% of students use ICT very frequently; while in Programming, Information Systems, Computer Systems, Operational, Digital and Analog, Networks and Computer Architecture, this number reaches 78%. It is in the ICT subject that the use of the computer and the Internet is greater, with 80% of respondents making sure to use this equipment very often. Although ICT is a subject belonging to the sociocultural component, because it is common to all courses regardless of the training field, it implies the use of computer software and consequently of the computer and the Internet for the accomplishment of the exercises, work and moments of evaluation of the modules (Spreadsheet, Database, Web Edition and Image Editing).

The use of the computer and the Internet in the sociocultural and scientific component subjects: 60% of the students never used ICT in the subject of Integration Area, and 75% never did in History and Culture and Art History. These numbers are even higher in Foreign Languages and Mathematics (over 80%) and Portuguese and Physics / Physics and Chemistry (more than 90%)

3.2 Activities carried out in the classroom using ICT

With regard to the type of activities for which students use ICT in the classroom, the most common is doing research using search engines, followed by writing out the work.

The presentations of these are also of activities in which the use of the computer and / or the Internet assume a preponderant role. However, despite mastery of different software, most students turn to PowerPoint to present the work they design in the classroom.

The lack of equipment available for students to work in the common classrooms and the lack of knowledge in the computer field by teachers of the sociocultural and scientific component subjects for the development of more elaborate and attractive presentations with the use of different software and means (video, graphics, tables, animations...) that enrich the contents to present can be a possible explanation.
Also the use of multimedia production tools and the use of specific software indicated by the teacher are common practices in the classroom of the subjects of the technical component. In spite of this, this learning is not applied in interdisciplinary contexts, but only for the accomplishment of technical subjects.

The less frequent activities in the classroom using ICT refer to the simulation of scientific experiments, participation in online training sessions and the online conversation with the teacher about school work.

The type of activities developed in the classroom with ICT is essentially in the field of performing exercises and then with an expository component. Communication through the computer and the Internet has little expression in the classroom, and direct contact between teacher and student predominates. In this way, the type of activities that the teachers propose is below the potential that the technologies offer and that are not explored pedagogically.

Some authors, based on the analysis of 232 studies, published between 1985 and 2002, concluded that even when there is an increase in the levels of use of the technologies by the teachers in the classroom, much of this use is due to tasks that are not very demanding cognitive view [1], [2], with only a small percentage of teachers (about one in nine) saying they feel comfortable using the technologies in the classroom in order to improve the didactic conditions in which learning normally occurs [3].

With regard to accessibility to equipment and infrastructure allowing for more effective access and use within the classroom, more than half of the students (51.6%) consider that only in computer classrooms there are computers with Internet access, while 44.1% say that a computer with an Internet connection is available in all or most classrooms.

The number of students who do not consider that the rooms are equipped with computers and the Internet increases to 56.3%, if to the 51.6% we add the students who say that "when a teacher programs a class with computer and Internet we have to move to an equipped room; we use laptops that are in another room or we use our own laptops".

The analysis, per school, of the availability of the computer and Internet in the classroom reveals that the distribution of equipment is not equitable. In one school there is a computer and internet in all the rooms, while in the other three the equipment is present mainly in the computer rooms.

The difference in equipping schools with computers and the Internet is particularly worrying because it reveals that the distribution of this equipment is not equitable or that the internal management of their distribution within schools is not carried out in accordance with principles of equality and importance of ICT in the processes teaching and learning. In addition, the autonomous management of financial resources, for example in private schools, can lead to disparities in the quantity and quality of ICT equipment and to jeopardize the teaching of pupils in the same courses but who attend different educational establishments.

In computer rooms or equipped for the use of computers, 50% of students have access to a computer with Internet only for themselves, while 26.8% share the same computer with two or three colleagues and 19.4% use their own laptop computer.

For most students (74.5%), schools are well equipped, with sufficient resources for their needs. Only 17.8% admit that there are resources but they are not sufficient for their needs, and 7.3% say that resources are scarce for the students’ needs.

### 3.3 ICT equipment

Regarding the quality of the ICT equipment in the school, more than half of the students (52.9%) consider the equipment good and 13.7% excellent, while 31.8% only average and 1.6% bad.

In the classroom, the most used ICT equipment to learn is the computer with Internet access, followed by the laptops that the schools have and the students own laptop brought from home. Less commonly used equipment for the purpose of classroom learning is the school-provided mobile phone, digital player, camcorder or digital camera, and laptop without Internet access. From this analysis it is important to highlight that the use of the interactive whiteboard is still limited, with reduced utilization rates, despite the equipping of schools with this type of equipment.
More than 60% of the students express their lack of use of the interactive whiteboards by teachers, 40.2% of whom report that they have never been used and 22.9% say that this happens infrequently, despite the training to which most teachers surveyed attended the use of interactive whiteboards.

This equipment continues to be used in the classroom more as a projection medium than to be used in the fullness of its functionalities, so we now see a transfer of the previous projection of acetates from an overhead projector for the transmission of the contents created in PowerPoint through projection from interactive whiteboards or projectors.

3.4 Confidence in task execution

According to the report "Portuguese Digital Natives: Age, Experience and Spheres of Use of ICT" [4], coordinated by researchers Gustavo Cardoso and Rita Spain of OberCom (2010), produced from INE data, almost all young people from 10 to 15 has had contact with the computer and the Internet.

Early initiation in access to this equipment allows students to feel confident in most tasks involving the use of technology, which is not surprising given that these students are "digital natives" [5] who grew up in the digital age, and so some authors say that they have an increased ability to use digital technologies.

It should be noted that for the students to identify reliable sources of information online, as well as assessing the reliability of the information found on the Internet, is still a task that does not give them great security: 27.4% of students report not being able to use the information found in the Internet without plagiarism, and 45.5% are reluctant to trust in this task, so they choose to affirm that they only "partially" comply with it, when this is one of the biggest problems teachers face when proposing a task.

4 CONCLUSIONS

The integration of ICT into teaching and learning processes depends not only on the provision of equipment (computers, the Internet, interactive whiteboards, among others) of school establishments, but also on the way in which it is received by school agents, from school principals, teachers and students and how they perceive the advantages that can come from the use of ICT.

If we focus only on the use of ICT vocational courses in public and private education, there is no substantial difference; Therefore, the factor of the type of educational establishment is not relevant with respect to the use that students of these courses make of ICT.

Most common classrooms are equipped with a computer for the use of the teacher and only the computer rooms allow students to use the computers. They show the same reality, revealing that in the technical component subjects they use this equipment frequently, while in the classes of the sociocultural and scientific component the use of the computer and the Internet is done mostly by the teacher for merely expository purposes, in which the student participation has no expression. This
reality has two problems: as Tapscott [6] says adolescents today learn not only by observing but through a process of discovery and participation. Such learning is intrinsically motivated by a desire to experiment with new "worlds" and to be able to control them, while the virtual environment requires them to develop different (multitasking) activities. Young people surf the Internet, chat with friends, search, download, play with other users and learn, and the school has to play an active role in this regulation and the teacher must be prepared for it.

In fact, the teacher is not yet prepared for the challenge of integrating ICT in the teaching and learning process. Based on the studies already developed on the subject, we believe that this is due to the fact that the use of technology implies the change of routines and habits acquired and require a greater dedication of time in the preparation of the classes; lack of equipment in classrooms and maintenance of equipment; the conditions of logistics and school organization (physical spaces, number of students per class, timetable of the subjects); lack of training; limited proficiency in the use of technology; attitudes unfavorable to the use of technologies and difficulties related to curriculum / program management [7], [8].

In the subjects of the sociocultural and scientific component, the use of the computer and the Internet by the student has as purpose the accomplishment of work and later its presentation with PowerPoints, the same way in which the professor chooses to present the matter, using the interactive whiteboard or video projector only for projection. Misuse of PowerPoint has in fact a counterproductive effect because students tend to fail to pay attention after some time from simple slide projection.

A transfer in the way contents are presented schools is occurring: if before teachers used transparencies and projected them with the aid of a projector, today they use the PowerPoint that they project with a projector or interactive board, not having an effective use of the resources and potentials that these technologies allow. It is necessary, and students realize this, that content preparation includes other resources, such as videos, images, interactive games, links to web pages, that make learning more attractive and dynamic.

REFERENCES


