

## ***ICT in Teacher Education at the University of Lisbon***

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### ***Abstract***

New digital technologies in a global society are a new challenge for teachers and the teaching-process. To educate media-competent students, teachers have to possess at least basic competencies in ICT. In 2002 the department for teacher education at Lisbon University decided to introduce a new course for the training of future teachers – ICT.

This article describes, in three steps, ICT at Lisbon University: beginning with the plan to create a new generation of teachers in a student-focused learning environment; then, curriculum development; and, finally, the first years of the lessons. The article will focus on the goal of raising awareness of the use of computers in school, and the new role of the teacher as a student.

### ***Keywords***

ICT; teacher education; Portugal

*We are living in a new communication environment, which has broken with the key communications tool of the modern era: the book. Computers and electronic media are ushering in the end of a world that Marshall McLuhan named 'The Gutenberg Galaxy'.*

*(Norbert Bolz, Am Ende der Gutenberg-Galaxis)*

1) In February 2002, the Plenum of the Ramo de Formação Educacional (Teacher Training Department) at Lisbon University's Faculty of Arts decided to introduce the subject TICE (Information and Communication Technologies in Education), for the first year of the two-year teacher training course. This was far from being a consensual decision, with the all-too-notorious critical, even hostile attitude to technology current in many areas of the Humanities rearing its head. This was in spite of the fact that Portugal had long since made the transition from the 'Internet as Myth' (Münker, Roesler 1997) to the 'Internet-in-Practice' (Münker, Roesler 2002) – nowadays, computers and the internet are just another more-or-less normal cultural activity for younger generations.

As the basis for constructing the new subject, only the framework had been put in place: Start date: 2003-04 academic year; Length: one semester. The focus of the course content was not to lie on transferring computing skills – we do not train programmers – but rather on seeing the computer as an educational tool for teaching. The aim was to show how classroom learning processes could be made more effective with the help of new digital media and media-competent teachers<sup>16</sup>.

The programme was drafted as a team<sup>17</sup>, with teaching staff from the various departments of our Faculty coming to the group with the widest range of skill levels in the area of multimedia. Given the base conditions and infrastructure available in Portugal<sup>18</sup>, the following general emphases were set for the first year:

- Raising awareness among prospective teachers for the teaching uses of computer/multimedia in the classroom
- Competent operation and use of learning software
- Creation of learning software to optimise learning processes
- Encouragement of pupils to create and present information with the help of Information and Communication Technologies

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<sup>16</sup> In UNESCO's Planning Guide for ICTs in Teacher Training (2002:37) it is clearly stated that: "...the development of ICTs does not improve education if the focus is on ICTs. The vision must focus on what ICTs can do to improve education."

<sup>17</sup> The team was led by Fernando Albuquerque Costa (Universidade de Lisboa, Faculdade de Psicologia e de Ciências de Educação), without whose experience and engagement the TICE subject could never have got off to such an effective start.

<sup>18</sup> On the relationship between multimedia and pupils in Portugal, see the investigation by Cardoso, Peralta, Costa (2001: 760), which arrives at the conclusion: "Unexpected emphasis is placed by pupils, especially in secondary education, on the use of multimedia materials in work of a specifically school-based nature, ahead of use for recreational purposes, eased skills acquisition and the desire to obtain information." Statistics on the IT infrastructure available at Portuguese schools are available at: <http://www.giase.min-edu.pt/>. These statistics, however, say little about actual use and access to ICT on the part of pupils.

In achieving these objectives, the following skills seemed to us to be of fundamental importance:

- Knowledge of the equipment (computers, CDs/DVDs, digital cameras, video etc.)
- Software
- Use of the internet as a means of communication (chat, e-mail, groups, discussion forums, video conferencing) and as an information source.

The learning objectives for our new subject were therefore:

- The development of technical competence
- The carrying out of short multimedia projects in pair-work, embedded in the subject orientation of the students and fitting in with school curricula.
- Evaluation of the projects

2) In the summer semester of 2002, we ran the new subject for the first time. The courses were divided up by discipline (geography, philosophy, classics, foreign languages) and generally contained up to 14 students, with one shared computer for every two students.

The decisive issue and condition for the setting of course content, however, was the prior computing knowledge held by our students. At this time, many students continued to hand in their work in handwritten form, and usage of the computers provided at the University was still relatively weak. A survey carried out by questionnaire demonstrated how heterogeneous the make-up of the courses actually was. The spectrum ran from students with home internet access, website construction experience and knowledge of programming languages, right through to participants who had never used a computer in their lives and had virtually no knowledge of digital media. The problems for such students were of course exacerbated by a certain understandable nervousness about technologies which were new to them, and they had to be initiated step-by-step in using the keyboard and the computer. This situation has changed considerably in the last two years. Although there remain a small number of students who, for material or ideological reasons, have done without a computer, the large majority has basic skills, and a growing number of our students have home internet access.

One objective of the new subject was to produce a short multimedia project in pairs by the end of the semester. We selected WebQuest, developed in the 1990s at San Diego State University, for this element of the course<sup>19</sup>. Students were to define their projects on the basis of their future teaching subjects, and implement them using material taken predominantly from the internet.

To put students in a position to carry out their projects, the first step in the twelve, four-hour teaching units was to present and compare the different internet browsers and search engines, as well as introducing e-mail and setting up a Yahoo group as a course discussion forum. Then came MindManager Smart, a program to assist the structuring of projects; HotPotatoes, a program to create classroom exercises, like quizzes and gap-

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<sup>19</sup> A good starting point for dealing with WebQuest is: <http://webquest.sdsu.edu/> . An introduction to WebQuests, which in the meantime have become widely used, can be found in Bernie Dodge, Some Thoughts About WebQuests, [http://webquest.sdsu.edu/about\\_webquests.html](http://webquest.sdsu.edu/about_webquests.html)

fills, etc.; PowerPoint, for the creation of presentations; and FrontPage, for user-friendly website construction.

At the project stage, teaching staff mainly supervised the work, the students working with a considerable degree of autonomy and also helping each other out<sup>20</sup>.

The subject is highly popular with a large majority of participants<sup>21</sup>. As a result of this, and the sense of responsibility required for pair-work, there is hardly any absenteeism, with the students often arriving before class to read e-mails or work on their projects. The teaching atmosphere is seen as unusually pleasurable and motivating by both students and trainers.

3) From the 2005-06 academic year onward, the TICE subject is no longer to be limited to a single semester – the trainee teachers are now able to select it as an option for the second semester. The vast majority of colleagues and students are now convinced of the need for the subject. This raises the possibility for us not only to deepen and extend the first semester's work (for instance, video and image editing received only superficial coverage in the short timescale), but also to focus more heavily on fostering a critical approach to the new media. For obvious reasons, our work with the computer was mainly of a practical nature, and consideration of the problems and dangers of the digital world was neglected. Missing elements included deeper discussion of software analysis, data protection issues, copyright, and manipulated images, to mention but a few topics. The effects of private, non-educational computer use on the learning patterns of future generations should be paid greater attention to in planning for the classroom<sup>22</sup>. On the whole, our experiences with the new subject may be described as positive. The creative potential of the new digital media allows issues to be dealt with where even the most interested student can be difficult to motivate.

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<sup>20</sup> The learning environment created by the new media contributes to transforming the teacher's role into that of a learner, and vice versa: "Today's school tries to establish a real-world environment and make possible an approach in which knowledge does not pass from educational designers and text authors to professors, from professors to teachers, and from teachers to pupils. Rather it comes from all directions, and the roles of student, teacher and professor are interchangeable. In a successful ICT project all are co-learners, and students may very well support teachers, showing them how to use ICTs in their work." (Unesco 2002: 174) This new situation is often viewed critically by older teachers, fearing a loss of their authority.

<sup>21</sup> Seymour Papert's assertion – that "Throughout the world, there exists an impassioned love affair between children and computers. (...) Everywhere, with few exceptions, I have seen the same glint in their eyes, the same desire to take control of this thing." (Papert 1997: 21) – is also true of pupils and students. The element of play is an excellent teaching aid.

<sup>22</sup> As a critical observer of hypertext, I shall mention only Christoph Türcke here: "Hypertext itself, however, is getting serious, and the alternatives, of being cut off or clicking for good or ill through the data masses, are ever more apodictic. Nobody believes that their way of thinking could emerge from this wholly unscathed. Maybe jumping suddenly from one link to the next provides a rush of stimuli; maybe it unleashes a search for concise terms. In general, it makes everything more fleeting and breathless. To copy down a text correctly takes today's students a great deal more concentration than it would their parents." (Türcke 2004)

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