

Using Free Software at a Portuguese Secondary School of Arts

Alexandre Martins and Fernando Leal
Escola Secundária Artística de Soares dos Reis
Porto, Portugal
amartins@essr.net
fjleal@essr.net

1. Introduction

Escola Secundária Artística de Soares dos Reis (ESSR) is a secondary level art school, located in Porto, Portugal [1]. Since 2002, our school has been adopting free software, starting with its information system and servers to its course labs.

In this article we describe the use of free software in ESSR, beginning with a short description of our school.

Then, we describe the use of free software in our ICT school services, courses and labs and make a particular remark to a LTSP Edubuntu installation. In order to have students feedback we have built a questionnaire about their views in relation to the free software usage at our school. After having analysed them, we present the main results.

In the next section we present a general view about free software at a national level and the Ministry of Education initiatives towards its use in schools.

2. Our school

The story of ESSR begins in 1884 when it was officially created. One year later its activity started and since then it has been teaching art related courses. Nowadays, as an artistic education specialized school, ESSR is aimed at teaching visual arts and offers four specialized artistic courses:

- audiovisual communication;
- communication design;
- product design;
- artistic production.

These four courses, strictly for secondary studying levels, last three years (10th, 11th and 12th grades) and can be attended daily or nightly. They are

orientated either to the job market or to the pursuing of studies at college or technical school.

3. Why free software

As we have started building the information and communication technologies (ICT) infrastructure several problems arose concerning the use of proprietary software:

- the high cost in acquisition and upgrades;
- the use of proprietary formats forcing to be "stuck" to a software platform or a particular company products;
- software distribution to students wasn't viable;
- insecurity and instability.

To overcome these problems, our school has been implementing solutions based on the Free and Open Source Software philosophy. The main advantages of this software in schools are well known and can be grouped in three areas:

- economical;
- technical;
- pedagogical.

The freedom to use, copy and distribute software allows schools to give their students copies of the software used at school. Besides, it is a way to avoid illegal copies ("piracy") contributing to social and legal consciousness. Free software development is based on sharing knowledge and cooperation; using it promotes these social attitudes. Finally, it allows students to study how software works giving them the opportunity to improve their computer science skills.

Economical advantages are more obvious: free software allows schools to save money in licensing; students and their parents also benefit from this advantage.

Concerning technical advantages, the stability and the immunity to viruses, worms, etc, are the most important for schools ICT management. Another aspect is that free software is usually multi-platform which means it can be used in different operating systems (e.g. Microsoft Windows, Mac OS).

4. Free software in ESSR

4.1 Available services

In relation to the ICT infrastructure our school network has about 100 PC's and

2 servers. Our 2 servers run a Debian distribution. In relation to PCs the operating system's distribution is the following:

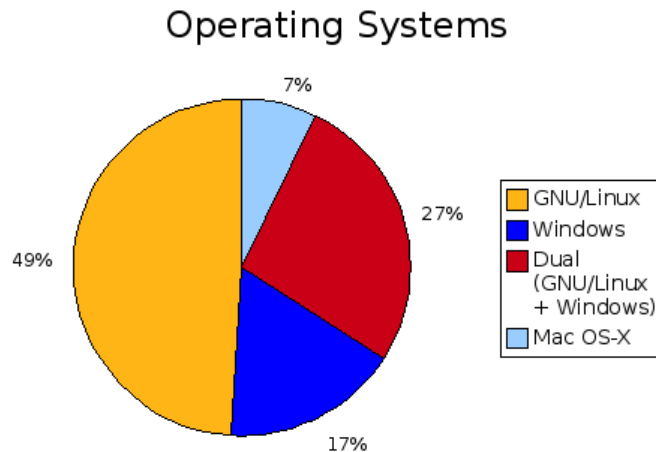


Figure 1: Operating system statistics.

Using NIS (Network Information Service [2]) and NFS (Network File System [3]) each user has a unique profile in the network allowing the use of any machine within the user's home directory.

Several services are also available for each user:

- electronic mail (POP and IMAP) and webmail via Google Apps;
- remote access via SSH;
- homepage hosting;
- school information system web access;
- course management system Moodle [4].

4.2 School Information System

Due to the lack of reliable and versatile school management software in the Portuguese market, ESSR decided to start the development of this software and release it under a free software license.

It is a client-server platform based on a PostgreSQL [5] database and a HTTP Apache server [6] for web access. There is also a standalone application available to management staff.

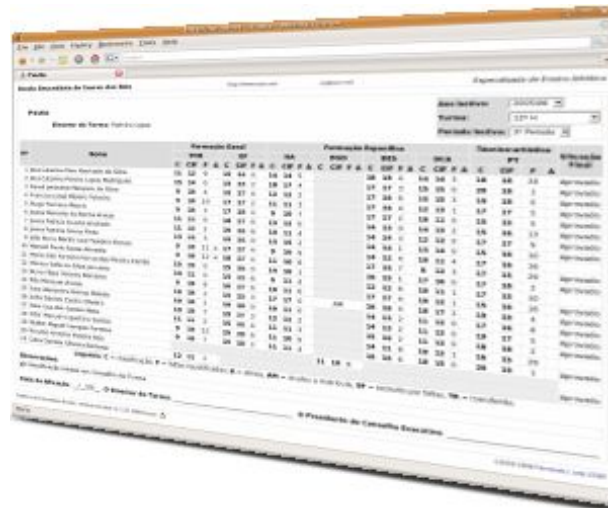


Figure 2: School Information System

In the school web portal users can authenticate themselves and access their information:

- timetables (students, teachers, classes, etc.);
- class summaries;
- grades;
- absences;
- event scheduler (tests, assessments, etc.).

Nowadays, there is an agreement with the Computer Engineering Department of Instituto Superior de Engenharia do Porto [7] which helps other schools to implement this system and a helpdesk service. Several schools around Porto are using this information system.

4.3 In classes

An art school has specific software needs: multimedia, web design, video; but there is also a vast set of free software applications that suit our courses' needs.

4.3.1 ICT subject

By initiative of the Ministry of Education, the subject of Information and Communications Technologies started in 2005/2006 to make sure that every student has a minimum set of computing skills. Therefore, it can be defined as a generalist introductory subject integrated in the 9Th and 10Th grades curricula. In our school we only have the 10Th grade.

We started using free software in this subject during the school year of

2005/2006. The available free software tools allow us to follow the Ministry's official syllabus and to achieve the main objectives of the subject (concerning our school needs in ICT tools):

- spreadsheet: OpenOffice.org Calc [8];
- image edition: GIMP - GNU Image Manipulation Program [9];
- vector graphics: Inkscape [10];
- website development: Kompozer [11].

A classroom of 15 Dell desktops using Ubuntu provides teachers with the necessary stability and easiness of administration to work with their students. Using free software enables the distribution of the software tools used in classes for the Windows and Mac OS students home systems.

4.3.2 Art courses

As our curricula are orientated for the job market, there are 3 labs that must have professional applications such as Adobe Creative Suite, AutoDesk AutoCAD, Final Cut Pro, etc.

For the other courses that do not require professional proprietary software, free image editing tools, vector graphics drawing, presentation or other tools, are used. Therefore we also have 3 labs running exclusively GNU/Linux (Ubuntu distribution [12]) desktops.

As a way to promote free software, we have installed Ubuntu in dual boot mode in machines that need Microsoft Windows operating system and the most used free software tools in Windows versions (e.g.: GIMP, Inkscape).

4.3.3 LTSP

Last school year we have contacted and visited a school which has some experience in Linux Terminal Server Project (LTSP [13]) implementations and we decided to give it a try using Edubuntu [14] and thus taking advantage of a set of old machines we have received from a nearby closing school.

The classroom has one server (a AMD Athlon 64 bits, 2 GB RAM, 2 network cards) and 13 LTSP clients (from Intel Pentium II-400 MHz to Pentium III).



Figure 3: LTSP classroom

What amazed us most was the ease of installation. As for the server, it was an usual installation: we connected it to the school's server through NIS and NFS so that any user can access his home directory. As for clients we used the same floppy disk to boot all the machines (without worries about the network card they had).

4.4 Main problems

As it was said above our school has special needs in some areas like multimedia and CAD tools. As video is concerned we have been trying several free software tools (e.g. Lives [15], Jashaka [16]) for using in the 10th grade introductory classes where a simple video editing software (e.g. Apple iMovie [17]) would be enough. But we still could not find a simple interface, out-of-the-box solution.

Another complicated area is web development. Free software does not have yet a WYSIWYG application such as Macromedia Dreamweaver [18]. An interesting project is Kompozer [11], but it is still in a early stage of development. A Flash editing tool is also a major need.

4.5 Students feedback

In order to survey the students about their opinion on the use of free software at our school, we decided to build an online questionnaire using Moodle's questionnaire module [19].

We got 170 answers from the 220 students attending the 10th grade ICT subject. The final results are available at [20]. These are some of their main findings:

- 60% of the students had never heard about free software;
- 74% have installed the software used in classes;
- 57% intend to continue using free software (39% probably);
- 64% find the free software used equivalent to other software (24% better);
- 79% see freedom of installation as the main advantage in free software;
- the main difficulty in its usage is the language/translation;
- 45% totally agree and 50% agree in the use of free software at schools;

One may conclude that students understand the concept of free software and agree with its use in schools. They install free software tools in their home computers and are aware that they are free to do it.

5. Free Software in Education at a national level

5.1 Ministry of Education guidelines - ECRIE

In order to promote and spread ICT use in Education, the Ministry of Education during 2006 created ECRIE (Equipa Computadores Rede e Internet nas Escolas) a team who's "mission is the conception, development and evaluation of initiatives concerning the use of computers, networks and Internet at schools and in the learning process" [21].

This team sees free software as simple way of introducing ICT in classes and consequently has been spreading its use through several initiatives:

- promoting the use of the learning management system Moodle in schools;
- developing teacher training programs in Moodle;
- development and distribution of the Free Software CD for Schools in co-operation with the National Association for Free Software (ANSOL - Associação Nacional de Software Livre) [22];
- creation of a free software dedicated portal, providing educational and training materials for teachers and students, news, forums, etc. [23];
- providing schools with free software platforms (server and desktop solutions) for ICT classrooms (an Ubuntu based distribution developed by the Universidade de Évora [24]);
- organization of the "Free Software in Schools' Day" conference in which schools gathered, exchanging experiences and their views towards free software;

More recently, ECRIE released the main guidelines for schools ICT development plans in which it is explicitly mentioned that schools must be considered a gradual adoption of free software.

These initiatives have brought attention to free software and nowadays there is a consensus among school's ICT co-ordinators about its benefits. However free software wide deployment in schools still faces resistance from teachers, pupils and management boards:

- the lack of familiarity with software in general makes them fear change;
- the wide presence of proprietary software in home computers raises interoperability difficulties (e.g. file formats) which they are not prepared to deal with;
- several school management boards, teachers and pupils are still not aware of the legal licensing aspects and consequently are not aware of the benefits of free software concerning distribution among the community.

5.2 Collaboration between schools

Besides the aforementioned ECRIE's sponsored initiatives, the collaboration between schools regarding free software usage has been very sparse and it happens mainly through informal networks of teachers interested in this subject.

More recently (February/2008) it was created a non-profit organization called Associação Ensino Livre [25] (in a free translation: Free Teaching Organization) aiming to promote free software and the development of free didactic materials. It is still in an early stage of development but through its portal has been promoting several initiatives such as free software tools workshops and developing a repository of free software tools tutorials and manuals.

6. Conclusions

From our experience we think free software is a very good choice for the Education sector. Its main principles are tightly related to Education. Students understand them and see the advantages in the use of free software at schools.

Although in some areas (e.g. multimedia, video) there is some delay in free software development when facing proprietary software, the pace of evolution might suppress this situation in a short term. In more generic areas, free software has already reached a level that allows its use in a great set of courses.

At a national level, the free software movement is growing and governmental institutions are becoming increasingly aware of its benefits and have been promoting its use. Schools are slowly introducing its use but, in some cases, still facing resistance from teachers, pupils or management boards.

Bibliography

1. *Escola Secundária Artística de Soares dos Reios*, <http://www.essr.net>
2. *Network Information Service*, <http://www.linux-nis.org>
3. *Network File System*, <http://nfs.sourceforge.net/>
4. *Moodle - A Free, Open Source Course Management System*,
<http://www.moodle.org>
5. *PostgreSQL*, <http://www.postgresql.org>
6. *The Apache Software Foundation*, <http://www.apache.org>
7. *Computer Engineering Department*, <http://www.dei.isep.ipp.pt>
8. *OpenOffice.org The free and open productivity suite*,
<http://www.openoffice.org>
9. *GIMP - GNU Image Manipulation Program*, <http://www.gimp.org>
10. *Inkscape*, <http://www.inkscape.org/>
11. *Kompozer*, <http://www.kompozer.net>
12. *Ubuntu*, <http://www.ubuntu.com>
13. *Linux Terminal Server Project*, <http://www.ltsp.org>
14. *Edubuntu Home Page*, <http://www.edubuntu.org/>
15. *Lives - Video Editing System*, <http://lives.sourceforge.net/>
16. *Jahshaka*, <http://jahshaka.org/>
17. *Apple iMovie*, <http://www.apple.com/ilife/imovie/>
18. *Adobe - Dreamweaver CS3*, <http://www.adobe.com/products/dreamweaver/>
19. *Moodle - Questionnaire module*,
http://docs.moodle.org/en/Questionnaire_module
20. *Using free software at ESSR - questionnaire report*,
<http://www.essr.net/~amartins/en/questionnaire/>
21. *ECRIE - Equipa de Computadores, Rede e Internet nas Escolas*,
<http://www.crie.min-edu.pt>
22. *ANSOL - Associação Nacional para o Software Livre*, <http://ansol.org/>
23. *Software Livre - ECRIE*, <http://softlivre.crie.min-edu.pt/>
24. *Alinex*, <http://www.alinex.org/>
25. *Associação Ensino Livre*, <http://www.escolaslivres.org/>