The Computerized Classroom and Free Software

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Abstract. This document's target is to open a discussion area with teachers and teaching coordinators, about the computers usage in educative areas. From a concrete seven-year-work experience on an institution with 2000 students (Colegio Seminario - Montevideo Uruguay), using computer science as a tool in favor of other subject's teaching, it will be explained in workshop two main topics: what the computer tool is; and the reason of the construction of this tool based on free software.
It is also about the problems found in this area to migrate from proprietary software to free software.[1]

1. Introduction

Educational computer science is the application of the computer science, the education and the ways of teaching and learning. It has a triple objective: the use of computer science for teaching subjects which are not related to it (languages, mathematics, history, etc.), the learning of the mechanics of common-use programs (text processors, spreadsheets, etc.), and the introduction of the new generations into the computer science's culture (electronic alphabetization).

With this definition as a target, this institution proceed to construct methods that would make possible to use computer science really as a tool but not as a goal itself.

The implementation of this teaching way is a long process. It is full of troubles, and this is precisely the fact that must be discussed at the workshop.

2. Computerized Classroom vs. Computer Academy

Many times it is confused educational computer science with the learning of Internet use or navigation programs.

A method with the only objective of this kind of teaching would produce just a PC operator. To educate this way, has the effect of promotion of the Institution as a marketing objective. This is precisely what it is known as computer academy, which is to consider instrumental computer science as a target itself.

If, by the opposite, the objective is to demonstrate Pitagora's Theorem, we will only teach the appropriate drawing program with the straight objective of demonstrating it. Our experience

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[1]Thanks for translation to Juan Godoy

is that the student learns the theorem, and in the instrumental part (the program's learning), they go much more further.

This way the students learn to use the programs faster than in an academy. This is the base of the common-use program's use over these targets.

To make the computer science a tool, it is necessary to construct methods which have to be pointed to each topic, and coordinate them with the other subject teachers.

This is the engine of this orientation; in the workshop it will be shown some concrete examples: Polygon Areas and Introducing Pitagaras' Theorem using general purpose software. That is what it is known as *computerized classroom*.

The greatest problems in this area are about proprietary software that students are used to use everywhere else, and on the other hand, the coordination with other subject teachers.

Other computer skills such as web pages, searching tools, e-mail, chat, etc. are used complementary the same way a library is used; not as learning element, but as information.

3. Computer Science's Material and its Symbolic Value

The computer has a great symbolic value, that's the magic through which students can learn faster and more enthusiastically.

Every detail must be carefully taken into account:

- The topics to teach must be those in which there are learning difficulties, and the computer should be just a help tool.
- The classroom distribution must be like a "U", to avoid the existence of a front part or a permanent authority and to make the student's interaction with their computers possible.
- The distinction among what is real or virtual in the teaching process must also be taken into account. There's no one who can assure that everything what is real inside the computer is also real outside it.

These are the main topics to discuss at this point; there are a lot more, but we do not want to make this document even longer; essentially:

- Teaching informatics as a medium instead of as a goal.
- Shortcomings of the free software approach for the desktop user.

4. The reasons for using free software

Everyone of us knows and feels different reasons through which free software should be the bedrock for the teaching in the computerized classroom previously defined. Nevertheless, we want to underline some topics that we understand are basic to justify its usage.

4.1. Computer Science's Culture and Philosophy

On of the bedrock of free software is precisely the concept of *liberty*, because the free software user can have the freedom about study, use and improvement of the tool.

These liberties involve a superior concept, completely forbidden in the proprietary software, the concept of *sharing* (to share the software with the neighbor, to copy it).

Thus, the student overlooks a double speech, on which on one hand he is taught to share everything, to avoid being selfish (to share the apple with his/her friend), and on the other hand he is taught not to share (not to copy software), if he/she does not do it, it is a crime, it is illegal.

In other words, the student is taught that material goods (apple) are shareable as well as immaterial goods (software) are not. Free software allows you to finish with that double speech and socialize the immaterial.

It is important to pay attention to the problem which is becoming every time more important, of the centralization of the computer science in a specific software and hardware platform as well. The students believe that there is an only way for doing things, and only software tool, and they are believing this every day more and more.

4.2. Be legal

Another point in which to underline in front of the student is the obedience of legal order and social institutions. From the computerized classroom's point of view, educators have the responsibility to educate about laws. [Vichon, 2000]

There is a common problem in almost all educative centers, and that is what they do not pay attention to the laws about the use of proprietary software, and in addition, they force the students to use proprietary tools. At every case neither educative centers nor students attend the conditions of licenses and royalties when they must.

Free software is the appropriate option, not only for the institutions, but also for the students to be obeying laws and using licenses legally.

4.3. Costs

Any educational option that you choose using proprietary software will involve the payment of licenses of one operating system and application tools that will take the software cost to values like the required hardware.

Using free software from the cost's point of view, it is possible to reduce it to it's half, in the addition of hardware and software. That is, for the same cost, you can install twice hardware.

In case there was not an application with license for free software, you do not need to get alarmed, the saving may be used to develop the missing application or improve or adapt any existent application. [Icaza, 2002]

4.4. Free collaboration monopolic politics

The use of proprietary software on educative areas means that you are training the student about using such a software. This will turn the student to be tool- dependant. In the future, when this student will get to develop himself professionally and will have to choose a software type, will obviously choose the one which he/she knows.[Baldi, 2001]

In other words, if teaching centers only teach about proprietary software, they will be freely teaching users of this proprietary software.

Free Software is the only one that allows you, not only to increase the decision frontiers at the moment of choosing software, but it is also the only one that assures you that the knowledge you already have, could (in some cases) feedback again the software's development itself and the society's in its completion. [Di Cosmo, 1998]

5. Preliminary conclusions

Teachers and teacher coordinators are invited to share experiences about Computerized Classroom, to look for methods to be used with free software tools, and to find solutions about it, to ask for help to the **free software community**.

We understand that the biggest problems are on kinder and initial school (from 5 to 7 years old) and on the pre-College, where we see the lack of free software tools.

But only the free software ensure more freedom for our students.

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