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Abstract

OpenLab ESEV is a project of the School of Education of Viseu (ESEV) that aims to promote, foster and support the use of Free/Libre and Open Source Software (F/LOSS), Free Culture, Free file formats and more flexible copyright licenses for creative and educational purposes in the ESEV's domains of activity (education, arts, media). Although its roots can be traced to individual initiatives organized by some teachers in previous years, OpenLab came to existence in the end of 2009. It emerged in an environment characterized by the lack of knowledge of the existing Libre alternatives and by work habits exclusively built around proprietary software.

In this paper, the project is presented, starting with its origins, dwelling in its conceptual framework, and finishing with some of its activities.

Introduction

OpenLab ESEV (http://openlab.esev.ipv.pt) is a project of the School of Education of the Polytechnic Institute of Viseu (ESEV), Portugal, dedicated to Free Software and Free Culture. The project strives to promote the use of Free/Libre and Open Source Software (F/LOSS) and Free Culture for creative and educational purposes in ESEV's domains of activity. Because OpenLab exists within a public institution of higher education, formative and ethical dimensions of our intervention are particularly important.

ESEV is located in Viseu, a city in the northern-center of Portugal. The School was founded in 1983 as a teacher education institution but has diversified its activities.

Currently, it has over 1500 students and 105 teachers and offers nine undergraduate and 13 Master's programs, most of them related to Education (i.e. teacher education, environmental education) but also including cultural animation, plastic arts and multimedia, sports, advertising, and public relations.

Origins

Although the project officially emerged in 2009, its origins can be traced to a few years earlier. Before the project came to existence, Free Software and Free Culture presence in ESEV's culture was almost residual. This faint presence was already the result of some isolated and sporadic activities, organized by a couple of teachers motivated by the desire to promote informed choices. The project emerged to aggregate these initiatives. It aimed at establishing a more tangible and persistent presence that could support and foster the use of F/LOSS, Free Culture and more flexible licenses for creative and educational purposes.

Besides the motivations of the teachers that became the OpenLab founders, previous research was pivotal in framing a landscape painted with the troubling hues and shades of unlicensed software, almost total lack of knowledge of the existing Libre alternatives and by work habits exclusively based on proprietary software (Gonçalves and Figueiredo 2008). The findings of that exploratory study raised serious ethical concerns, in particular regarding the influence of classwork on students' software choices and their use of unlicensed copies. As a result, it strengthened the urge to actively contribute to change.

Currently, OpenLab is sustained by a core group of four teachers working on a voluntary basis. This group acts as a hub in a transient network that includes students, teachers, former students and other actors not directly connected to the School.

Free as in Libre

There are several arguments for F/LOSS, from financial savings to social responsibility, many of which are critical for educational settings. As citizens but also as educators, as teachers and researchers, the ethical grounds are particularly important

for us. The conceptual framework that sustains the project is built and rebuilt with contributions from several people, projects and ideas stemming from different areas. The preference for the word 'libre' (Spanish for 'free') is related to the strength of the idea of freedom in most of the authors and movements we connect with, while also avoiding the ambiguity of the word 'free' in English. A snapshot presentation of some of the areas follows.

On Free Software and Open Source

It is not uncommon to encounter the use of the terms Free Software and Open Source almost interchangeably or in aggregated alternatives like Free/Libre and Open Source Software (F/LOSS). Furthermore, derivative designations have been coined to name a variety of projects and approaches in different domains of activity that widen the more limited scope of the software realm: Free Culture, Open Educational Resources, Open Access, Free Knowledge, etc. In most cases, this probably hints, at least to some level, the sharing of the principles and ethical foundations that underpin the Free Software and Open Source movements. Nevertheless, the juxtaposition of some meanings and the existence of shared dimensions should not obnubilate the distinction and, above all, ignore the historical narrative of these movements and the meanings intended by its founding figures.

The Free (as in Freedom) Software notion was used for the first time by Richard Stallman in 1983, in an email which heralded the beginning of the GNU operating system project (Stallman 1983). Later, the author started to articulate the defined set of freedoms that underlie the notion (Stallman 1986) moving towards the first version of the Free Software Definition, written in 1996 (Stallman 2010a). The present official definition remains very close to the first version, establishing that a computer program is considered Free Software if it's released under a license that complies with the following four freedoms: freedom to run the program for any purpose (freedom 0); freedom to study how the program works and change it (freedom 1), access to the source code being a prerequisite; freedom to redistribute copies (freedom 2), and freedom to distribute copies of the modified versions (freedom 3), access to the source code being a prerequisite (Free Software Foundation 2013). Accordingly, the user has the freedom to run, study, change, copy and distribute the software, either in its original

form or modified version, without any restrictions or with restrictions related to the sole purpose of guaranteeing that the four freedoms are irrevocable.

The Open Source label was forged in 1998 with the aim to identify a new movement and create a clear distinction to the politically and philosophically oriented Free Software movement (Open Source Initiative 2012). According to Perens (1999), the Open Source approach follows the concerns expressed by Raymond in 1997 regarding the receptivity of the more conservative business sector to Free Software: the focus placed on the issue of freedom by Stallman was limiting Linux adoption and development in the enterprise world.

The influence of the ideas originally advocated by Stallman in the Open Source Definition (Open Source Initiative, no date) was acknowledged by Perens (1999), who recognizes that the latter can be interpreted as a derivative work of the former. Stallman (2010b) also recognizes the existence of an overlap between the two software categories and some shared dimensions between the two movements. However, he also emphasizes a fundamental conceptual difference between them: Open Source refers to a methodology and Free Software is a social movement. "For the Open Source movement, the issue of whether software should be open source is a practical question, not an ethical one" (Stallman 2002a, p. 57). Hence, the adoption of Open Source designation means moving the focus of the discussion from the ethical issues to the practical issues related to software development methodology.

This view of Open Source as a development methodology is also sustained by the historical process of the schism. In an essay originally written in 1997, Raymond (2000) uses the "Bazaar" and the "Cathedral" as metaphors to contrast the two development methodologies used in the Linux and the GNU projects, opposing the "release early and often, delegate everything you can, be open to the point of promiscuity" style of the Bazaar, to the "carefully crafted by individual wizards or small bands of mages working in splendid isolation, with no beta to be released before its time" way of the Cathedral. This criticism was a relevant turn that helped stage, and ultimately led to, the Open Source movement, as the following events demonstrated. A few months after the public presentation of the essay, Raymond became a leading figure in the schism narrative and assumed the role of the first president of the Open Source Initiative (Open Source Initiative 2012), but not before publishing a revision of his essay from which he had by now eradicated all Free Software references, replacing them with Open Source.

The social impact of these movements extends far beyond the boundaries defined by the software licenses and development. The Free Software movement advocates common ownership for ethical imperatives, and it questions the control imposed by Intellectual Property in favor of more social justice and solidarity. The Open Source movement values the open collaboration and common property as a required condition or necessity. These movements come imbued with a huge transformative potential for the current modes of production and economic models. For Moglen (2003), they demonstrate that "Creators of knowledge, technology, and culture discover that they no longer require the structure of production based on ownership and the structure of distribution based on coercion of payment". Their appreciation for collaboration, solidarity, sharing and the commons, as well as the vindication of the common ownership of the means of production or peer production and creation based on sharing and collaboration also made their way to the ideological core of a variety of movements and projects from different domains or fields of activity.

On Free Culture and Free Education

Free Culture identifies a social movement concerned with the limits imposed by overly restrictive copyright laws. "Free art, and a free culture, is of vital importance for a free society" (Myers 2008, p. 311). Free Culture is inextricably linked to the Free Software movement, starting with the influence of Stallman's ideas and writings (Lessig 2004). Both these narratives of resistance and emancipation share a critical stance towards the control and dependence that arises from the notion of intellectual propriety in the digital world, with Free Culture extending the scope to the entire artistic and cultural production. For Lessig (2004), today's culture is a "permission culture", "a culture in which creators get to create only with the permission of the powerful, or of creators from the past" (p. XIV), which means we need to decide "whether that information society will be free or feudal" (p. 267).

The Free Culture ecosystem encompasses various organizations, movements and personalities discontent with 'all rights reserved'. They have different agendas, ranging from copyright reform to abolition. Although not an organized social movement, there are two components that we would like to highlight: Creative Commons (CC) and copyleft.

Creative Commons (CC) is a nonprofit organization, founded in 2001, devoted to Free Culture. It provides support to Free Culture projects but is mostly known for its "Some Rights Reserved" licensing tools. CC licenses are legal instruments framed by copyright that allow creators, unsatisfied with "All Rights Reserved" restrictions, to choose more precisely the terms and conditions for the use and sharing of their work. This legal framework includes several licenses that set different combinations of rights and restrictions. The social relevance and dissemination of these licenses is attested by the growing numbers of adoption (Creative Commons 2012) and use by organizations and projects as influential as Wikipedia, Internet Archive, MIT Open-CourseWare, OER Commons or YouTube, just to name a few.

Originally, copyleft designated "a general method for making a program free software and requiring all modified and extended versions of the program to be free software as well" (Stallman 2002b, p. 91), thus avoiding the risk of turning Free Software into proprietary software. This copyright hack, authored by Richard Stallman, uses copyright law to limit the restrictions imposed by the terms and conditions of the copyright itself and is a central device of the GNU General Public License (FSF 2007), the most important Free Software license also originally written by Stallman. The effectiveness of this protection, along with the underlying principles, helps to understand its influence and transfer to other domains beyond software development. The Share-alike condition, present in some CC licenses, that protects the reciprocity of sharing, forcing the creator of a derivative work to preserve the freedom to modify, is an example of a copyleft device.

The Free Culture movement expands the scope of the idealistic goals of Free Software, "spreading freedom and cooperation" (Stallman 2010c, p. 129), to the entire knowledge and culture creation. It stands for a creative society and culture based on "sharism" where "The new economic formula is, the more people remix your works, the higher the return" (Mao 2008) and recognizes that "it's time to set property aside, time to start recognizing that knowledge – valuable, precious, expensive knowledge – isn't owned. Can't be owned" (Doctorow 2008).

Considering that "The Internet is the fabric of our lives" (Castells 2001, p.1) means recognizing that "The Internet has also fostered a new culture of sharing, one in which content is freely contributed and distributed with few restrictions or costs" (Brown and Adler 2008, p. 18). This is probably not very surprising if we consider that "The World Wide Web (W3) was developed to be a pool of human knowledge, which

would allow collaborators in remote sites to share their ideas and all aspects of a common project" (Berners-Lee et al. 1994, p. 76). However, this digital world unveiled, expanded even, a decisive tension. On one side, the idea of information, knowledge and culture as private property underlying the commodification of intellectual goods and services, becoming subject to a market economy that works on the assumption of scarcity. On the other, information, knowledge and culture as public goods, common ownership, with non-rivalrous consumption (since consumption by one does not reduce the amount available for others), for which exclusion by price or other means is neither necessary nor desirable because consumption is non-rivalrous and there are no additional costs associated with additional consumers. For the first, exclusion mechanisms, like price or copyright, and artificially imposed scarcity are required by the market to protect the property and economic rights, therefore providing incentives for the private sector. For the latter, that exclusion from information, knowledge and culture is an ideological choice and establishes artificial barriers around the privileges of some at the expenses of human rights, the common good, solidarity and social progress.

The concerns and the values that Free Culture, and F/LOSS, stand for are interweaved with education in a society being shaped by the networked information economy (Benkler 2006). For Downes (2011), "Issues surrounding copyright and free access are among the most divisive and most important of the digital age, bringing into the open questions about the nature of knowledge, of content, of society, identity and democracy" (p. 6).

Education, as a not politically neutral human endeavor (Freire 2003), has now to face "major philosophical divides": "Commercial vs non-commercial? What is the role of the private for-profit sector in learning? Is open education the final full flourishing of public education, or is it the end of it? Directed learning vs self-directed learning (or control learning vs free learning)? Does the education system serve the interests of the providers, or of the learners?" (Downes 2011, p. 7). Open Educational Resources (UNESCO 2012) and Open Access (Suber 2012) are closely linked to the Free Culture and F/LOSS movements. All these narratives of resistance and emancipation embody a world view based on a 'practice of freedom' and stand against the digital divide.

OpenLab ESEV

Four key areas of action were defined for the project: dissemination, training, support and production. The first three cater mainly to the school and the local community. The fourth extends the scope, seeking to build a national and international participation.

Dissemination

A key objective of the project is to present and discuss the concepts of F/LOSS and Free Culture within our school and local community, emphasizing the strategic and ethical issues. This includes raising awareness about the range of choices and criteria for choosing software, promoting freedom of choice, and fostering discussions beyond licensing costs, software features, marketing strategies or brand awareness into the ethical and larger issues related to the use of technological tools.

Dissemination has been implemented through different activities and strategies but the OpenLab room is probably one of the main reasons that explain how the project firmly established itself as part of everyday life of the school community. The room is located in the ESEV main building, open to the school community, with computers running only F/LOSS. Originally planned as an open space where students and teachers could explore Free Software and, eventually, get some support, it became a working space and the place to go for anyone looking for information or technical support on F/LOSS or Free Culture. Unfortunately, the project doesn't have the human resources to maintain the room permanently open. Its availability is the result of shared management and volunteered time by OpenLab teachers and a few students .

The project website, together with social networks profiles, is another important dissemination device that not only provides information and news about the project and the Libre world but also allows an easy way to publish and share our own documents and training materials. The website allows for people outside the school to keep up to date about our activities and join in on the discussions. All work available through the website is shared under a CC or GNU GPL license, depending on its nature.

Finally, two additional strategies have also been implemented by the OpenLab members. On the one hand, the sharing of experiences in national and international

forums, conferences and events, as a way to raise awareness and an effort towards partnerships and new collaborations. On the other, organizing local events on a regular basis in order to foster discussion, usually in combination with relevant international events (Software Freedom Day, etc.).

Training

Training has been a key area of our activities, attested by the over 60 workshops organized in the last three years. The workshops have been both "in-house" and "outside". The "in-house" are organized at ESEV, and can be divided into basic/introductory and advanced training. Usually, introductory workshops are given by ESEV teachers or students and advanced training by invited experts. Although open to the general public, "in-house" workshops mostly targeted the school community. The "outside" workshops happened in various contexts for diverse audiences, including several public secondary schools, a teacher training center and CINANIMA International Animated Film Festival, among others. These workshops had a duration of 3h-6h and were given by teams of teachers and students.

The focus of the workshops was on issues as diverse as bibliographic references management, 2D image editing, vector graphics, creative coding and programming for educational purposes, digital painting, 3D and stop-motion animation, audio editing, desktop publishing, etc. Interested students and teachers developed their skills using tools as such Zotero, Blender, GIMP, MyPaint, Scratch, Processing, Luciole, ToonLoop, Scribus, Inkscape, LibreOffice, etc.

The narratives collected among trainees and trainers strongly suggest the presence of collaborative learning and attitude changes (Gonçalves and Figueiredo 2012). In addition to skills transfer between peers, between students of different programs and even different educational levels, this dimension supported the building of new skills, expanding or complementing formal education, and fostered practices towards the appreciation of lifelong and autonomous learning, technological fluency and "agnosticism", solidarity and collaboration among peers.

Support

OpenLab assumed the responsibility to support migration processes and projects developed with Free Software or shared as Free Culture. This goal is achieved through the everyday and voluntary willingness of teachers and students involved in this project to provide support and answers of a more technical nature. Support activities present a threefold nature – general, project specific and support to practices – and often require an additional learning effort.

Free Software installation and configuration of laptops (students' and teachers'), including GNU/Linux operating systems, is probably the most visible and recurrent general technical support activity. Nevertheless, we highlight two other relevant activities: installation of Edubuntu, an educational oriented version of the Ubuntu operating system, on multiple PCs at several kindergartens; and the distribution of hundreds of DVDs and USB sticks with live versions of GNU/Linux customized for educational or media production.

In terms of project support, we highlight EVTux as a customized version of Ubuntu that aims to facilitate access to and disseminate Free Software for Visual and Technological Education (a subject in the Portuguese lower secondary curriculum). It was created and distributed under EVTdigital. OpenLab provided technical support. The use of F/LOSS in students' graduation projects has also become increasingly important and indicates the level of F/LOSS adoption by students. OpenLab offers support and incentive to such initiatives. Between the years 2008/2009 and 2011/2012, more than a third of the Plastic Arts and Multimedia final projects (39 of 108) based their development and production on F/LOSS. OpenLab provided technical support for the installation and configuration of the software and set up a "render farm" (16 projects were short 3D animation movies).

Recently, OpenLab set up its own web server and, as a result, expanded the support available for educational and artistic practices within the school community. At present the project provides a Q&A web platform, facilitating peer support and informal learning dynamics; a web-based production asset management system specifically designed to support the creation of digital assets for media projects (visual effects, films, video games, etc.); and a local area network distributed rendering solution for 3D animation productions.

Production

Production poses the biggest challenge. If the previous areas primarily aim at mediating between the community in which OpenLab operates and the Free Software and Free Culture ecosystem, this fourth dimension embodies the will to actively participate in that same ecosystem. Simultaneously, the project is particularly interested in opportunities for local and international partnerships, fostering collaboration between teachers and students, beyond formal educational settings and the curriculum, and finding synergies between contributions from former students and outside experts and professionals from a diverse range of fields. Hitherto, OpenLab production practices revolve around documentation, coding, research and cultural works.

Training materials and curated guides of Free Software for specific purposes are the most part of the documentation published to date. The training materials are authored by the teachers, students and experts involved in the workshops. After the workshop, the materials used are shared via the project website. The guides present a vast range of softwares for different purposes with a special focus on arts and media creation and low-secondary education. The suggested softwares are also installed in the OpenLab office computers and available for exploration.

Outside partnerships are also important. Libre Pipeline (http://librepipeline.ani-maxionstudioz.com) is a list of Free Software for animation production curated in partnership with AnimaXion Studioz, an independent animation collective devoted to the exploration of F/LOSS for animation. The publication partnership with Associação Ensino Livre (Free Teaching Association), a Portuguese not-for-profit devoted to the promotion of F/LOSS and open contents in education, is also important to amplify the dissemination of our documentation.

OpenLab coding is mostly a bottom up process whereby team members work and learn together to solve problems raised by teaching practices or related processes. The software projects briefly presented below were driven by real world issues and approached as opportunities for learning and collaboration, both to students and teachers. All software is shared under GNU GPL licenses.

1) Ottographer: time-lapse tool developed for primary education
2) StudiozCollabPress: WordPress plugin for short movie production management
3) Festivalz: database to keep track of video/movie festivals

4) ProDISC: shell scripts to ease the creation of directory structures for animation and VFX projects
5) WebMizer: shell scripts to assist WebM video encoding
6) Taskz: task manager for animation and VFX projects.

Research is considered a priority. There has been a particular interest, engaged through action research, on education and artistic production practices. The studies conducted to date had different foci: collaborative knowledge production through the use of software in Early Childhood Education, software for specific creative endeavors and the relationship between Free Software and Free Culture and the Portuguese educational system principles.

Media and cultural works productions are exceptional candidates to help us create the opportunities for the use (and refinement) of workflows exclusively based on F/LOSS. The technical support provided to the Plastic Arts and Multimedia degree projects and the conducted research and experimentation on artistic production practices have enabled theoretical and practical knowledge construction.

Currently, OpenLab is engaged in two ambitious media projects in the fields of virtual heritage and digital animation: Castro Lusitano Virtual, an interactive 3D reconstruction of a typical Iron Age settlement in central Portugal; project Grimm, a narrative collage inspired by the Brothers Grimm work using digital cutout animation. Both originated in the context of formal education, started as individual students' projects, are developed with F/LOSS exclusively, meant to be shared as Free Culture, and are now in production with the collaboration of teachers and students.

Conclusions

We're still far from a balanced scenario: most of the students and teachers still have workflows built around proprietary software; software features are still the main concern among teachers and students. So, what has changed?

Free Software and Free Culture are no longer absent from the discourse of students and teachers. The school community is, at least to some extent, familiar with these concepts and, in some cases, they were integrated as learning topics in syllabi. Additionally, although proprietary software is still predominant, the use of F/LOSS has

become common. Software projects like Blender, Zotero or Processing, to mention a few, are installed in the classroom computers and students' laptops, alongside popular proprietary softwares. F/LOSS is part of the daily life of many students and a core element of a growing number of degree projects, which is particularly relevant considering that many of these students are enrolled in digital arts courses or programs where proprietary software is still clearly prevalent.

OpenLab ESEV became a reference to all looking for F/LOSS support and consulting services, including teachers and students from other schools. Outside the school community, we witnessed children painting with MyPaint, primary education students creating animations with ToonLoop and secondary level students doing 3D modeling with Blender. All these activities were enabled by the joint effort of OpenLab and teachers working in the local community and they were made possible by our students' involvement.

Until now, and presumably for the future, our action has been guided by the understanding of Free Software and Free Culture as ethical stances towards a society and culture based on the free exchange of ideas and creativity, on freedom and sharing. They stand for an ecosystem that refuses the artificial barriers that benefit only a few. Free Software and Free Culture are statements about the world we live in and how we choose to live, and teach, in it.

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