Education on Open Models and Digital Commons

Commons Chair: Knowledge, power, crises | Researcher-In-Residence

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A research to explore how to structure education on open models and digital commons into universities, schools and organizations, for society and citizens more broadly. As fundamental elements of digital technologies, the aim is to think about how to integrate open models at the heart of robust digital literacy. A way of seeking to better master the digital as a knowledge tool in the face of contemporary crises.

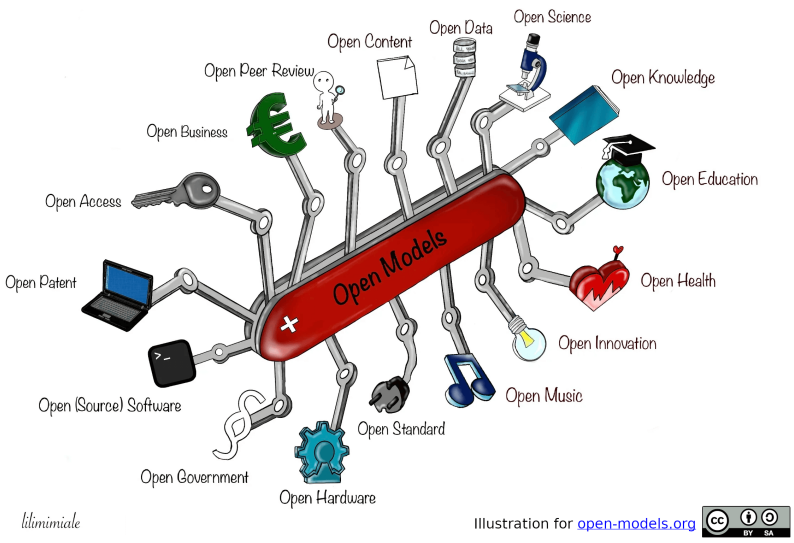

Figure 1: Illustration of Open Models

Online version: https://abcsxyz.github.io/open-models-candidacies/ias/README.html

Introduction

The dynamics of openness and digital commons are ubiquitous through digital technologies, they are shaping in depth our digital world and with it the society, they are becoming increasingly important due to their pervasive nature. The foundations of digital are based since its origins on a culture of sharing and collaboration around different types of digital resources, starting by software. However, these openness practices are either unknown or little understood and almost never considered as a complementary whole that seems to obey common laws.

Today, there is almost no formal education on these subjects and when it exists, it remains in silos without nurturing a real general culture on these challenges. Researchers are gradually being trained in open science, computer scientists in open source software, teachers in open education and so on without providing a kind of comprehensive overview of these phenomena. Understanding the digital world requires a basic understanding of open models and digital commons, an education in a variety of forms, for a variety of needs, for people with a wide range of expertise where everything still has to be explored.

More than just digital literacy, what is at stake is our whole relationship to knowledge. Our ability to produce and explore scientific knowledge while understanding the scientific revolution underway, our ability to provide and evaluate more reliable teaching materials more rooted in scientific knowledge to adapt learning to the current context, our ability to build a trusted, robust, scalable and adaptable digital infrastructure to collaborate on knowledge, a way of seeking to co-produce both technical solutions and cultural change to hopefully adapt to our reality.

Landscape

We're just discovering how the digital can work. These sharing and collaboration practices emerged with the advent of computers (50's), the availability of software and its source code was a necessary practice until computers became miniaturized (70's) and a software industry developed, which then closed down its software supported by the US Copyright Act of 1976. 80's saw a desire to formalize the sharing of source code with the arrival of the « free software » movement initiated by Richard Stallman. It wasn't until 1998, when so-called free software became essential to the emergence of the Internet and the World Wide Web, that the first theorizations of mass collaboration practices through digital technology on freely accessible resources, on « digital commons » were sketched out by Eric Raymond's essay « The Cathedral And The Bazaar ». It led to the "coining" of the term open source (Peterson 2018) and the creation of the Open Source Initiative. 25 years later, open source software plays a critical and ubiquitous role in all modern applications (Linux Foundation 2022) with, as a result, the gradual introduction of dedicated competence hubs as shown by Open Source Program Offices (OSPO) and similar entities (TODOgroup n.d.) within organization.

With these openness movements, the first thing that seems to emerge is a willingness to share. With a maturing technical and cultural environment and intersecting needs, we seem to be witnessing a realization of the collaborative potential of digital technology with a methodologization of these practices, with a subsequent phase of structuration and institutionalization to take fuller advantage of it.

Since the 90s, these open models have taken shape in other fields outside software, generally inspired by open source software. In 1998 too, open content was introduced by David Wiley to promote sharing of scholarly publication (research or textbook) with a stronger focus on education (David Wiley 2018), the term open educational resources was then formalized in 2002 at a UNESCO congress (UNESCO 2002) with the notion of open education that will then be gradually adopted. A desire to share research resources/articles also emerged during this period, which can at least be dated to around 2002-2003 with what some call the « BBB definition » with the declarations for open access from Budapest (2002), Bethesda (2003) and Berlin (2003). Open hardware was also coined in 1997. It was primarily about a willingness to share resources, today we are gradually seeing this desire and greater possibility of collaboration within these movements. In open science, which seems to be the second most developed open models, some people are talking about « open science 2.0 » with a real collaborative ethos that goes beyond simply sharing publications (Thibault et al. 2023), an intent that is reflected elsewhere such as in the recent update from Zenodo which talks about a « New Mission: From 'sharing research made easy' to 'collaboration made easy' » (Zenodo 2023). We're seeing this trend in education, especially with Wikipedia leading the way. Beyond software, with digital technology becoming more widespread, we are also slowly moving towards greater collaboration.

We are in the early stages of the digital revolution, exploring both its capacity to disseminate information and to enable people to interact, with open models and digital commons being some of the seeds of this potential.

Policies and strategies for open models are being put in place worldwide at supranational, national and organizational level, often with a tendency towards 'openness by default', 'public money, public resources' approaches. The UN Global Digital Compact recognizes certain types of open resources as digital public goods while claiming a commitment to their development (United Nations 2024), UNESCO has issued recommendations on open science (UNESCO 2021) and open educational resources (UNESCO 2019) which are intended to serve as a normative instrument to influence national legislations. Since the 2010s, many countries have been enacting laws and strategies to promote open science with a desire to normalize it such as the national plans for open science in France (Ministère français de l Enseignement supérieur et de la Recherche 2021) or the White House Office of Science and Technology Policy which declared 2023 to be the year of open science in parallel with a strengthening of open science policies (Office of Science and Technology Policy 2024). Open education policies are also arriving, as in the United States with Zero Textbook Cost strategies to limit the cost of learning materials or in France in the recent Digital Strategy for Education (Ministère français de l'Education Nationale 2023) which seeks to make digital commons a « horizon by default » (Audran Le

Baron 2024). There are also policies on open source software to encourage their use or the publication of source codes such as the European Commission's strategy (European Commission 2020), open source software also has a place in open science and open education policies with plans to move towards « Open Scholarly Infrastructure » (Bilder, Lin, and Neylon 2023).

At the same time, these open models are maturing and policies are supporting this development. In the background with these orientations, the challenge of the culture, of education and training slowly arise in a variety of forms. Gradually, courses are being developed to meet these needs while remaining limited to a specific dynamic of openness. If we expect to realize more fully the potential of digital technology we are facing a major skills gap.

There are increasing education and training needs on open models and digital commons in all universities worldwide, in any research institutions from the CERN to NASA or IAS, in associations or companies like through OSPOs, in public administrations, in public and private schools, education that can also take place informally in various spaces such as in third places/makerspace/fablab, and so on. A better understanding of these topics enables people to think more effectively their digital strategies.

Research Project

The work I'm involved in is about exploring what education on open models and digital commons might mean while considering their future integration into digital literacy, an attempt to think about how to establish the basic knowledge needed to enable people to take ownership of open models and digital commons with this global perspective.

Part of the reflection is evolving for now around the creation of a knowledge base on open models: https://open-models.org

The current approach is to target the academic and research community as the main places where knowledge is shaped and transmitted, to federate specialists in these fields who are beginning to face up these educational challenges around openness movements and to think more collectively these questions. Rather than trying to reach the general public directly, the aim is to help structure the roots of education on open models and digital commons and then drive the rest of society forward by reducing the various barriers to entry through intermediaries. A train-the-trainer mindset.

For example, to reach pupils in the first cycles of education it's about thinking how to provide open models education to university students in educational science in connection with open education policies.

In view of the importance of these phenomena on a world scale, it becomes a reflection on how to enable education in a systemic way. To think about how to provide the means and structure the ecosystem(s) that can enable this development which would enable adaptation to a wide range of contexts and levels of expertise. As we have only just begun to explore these subjects, it's a job that should be done at the intersection between research and education to provide

teaching materials with the latest research findings, to ensure that education fuels research by enabling researchers to enhance their openness skills. It's an exploration of open models for open models education, a discovery of open education in particular.

One important dimension of the project is the creation of interest around the subject of education on open models and the digital commons. To create this desire to move forward on the subject as this is not yet a formulated need, while relatively nobody working on it even though they are fundamental and structuring elements of digital technologies. We're in a period where these openness movements remain fragmented and often unaware of each other, a federation of open models is still to come in the coming years to align the common interests between players of these dynamics.

It's also an education that can and should raise the conscience of the citizen, to nurture scientific literacy by helping to understand how science is produce, how it can be transmitted and accessed to foster the relationship between science and society, to question how education can work to acquire knowledge and skills while trying to catch the quality of what we receive by being able to observe the relationship between science and education. To make people realize that we're not an enlightened society and that we've only been discovering science and education for a few centuries now, with digital technology revolutionizing our relationship to knowledge by succeeding the printing press, all at the heart of a shift in our conception of the world due to ecological and social crises. Open models education becomes both technical and philosophical anchored in the History of humanity.

Open Models Education next to Nantes University

By being attached to the University of Nantes, the IAS could offer a special environment in which to explore education on open models. The university has recently put in place an « open university » strategy at the intersection of these dynamics of openness (Université de Nantes 2023), with an orientation in favour of at least open science, open education, open innovation and what is called open government. In relation to this strategy, they have received €23 million in funding from the French National Research Agency for a project entitled « Ouverture » (Openness). They are in the vanguard in France in this work at the intersection of these openness movements in universities, fairly voluntarist in this area as a university project to affirm « knowledge as a common good ».

At the end of 2024, they launched their OER factory (Open Educational Resources), inspired and in collaboration with the canadian OER factory from universities of Sherbrooke, Laval and Montréal. These factories provide both an infrastructure and human support for the production and use of educational resources. As these initiatives take shape, there is a growing desire to train teachers in open education and researchers in open science, as well as the teams that support them (such as educational engineers or librarians). As players often find themselves at the intersection of these issues of openness, a gradual move towards more comprehensive

training on open models and digital commons could be underway. With, for example, an intent to use open education for training in open science through a collaboration between these structures.

Nantes university host the UNESCO Chair RELIA (Ressources Éducatives Libres [OER] + AI), with its members being involved in the institution's strategy, where they are part of and even coordinate a UniTwin network on Open Education connected with various UNESCO chair worldwide. They are also members of the EUniWEell network which have produced a declaration on open education to demonstrate their alignment with these practices.

A whole space conducive to a certain education on open models and digital commons, with the possibility of disseminating and producing everything in relative collaboration with these structures at the heart of academic environments.

In France, with the digital strategy for the national education system and, in particular, the setting up of their forge on educational digital commons, they are also gradually taking an interest in training in these issues of open models and digital commons. This can be seen in their working groups around the forge, the GTnum Forges. A collaboration between INRIA (the French National Institute for Research in Digital Science and Technology) is being organized to this end, initially to provide training in the technical use of the forge but with some view to provide training on digital commons as a whole.

An opportunity to explore education on open models and digital commons within the university world while gradually providing means and food for thought for other parts of the education system.

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