K-12 Textbooks must be digital and open

***Image**: Books burned in Santiago, Chile, days after the Military Coup, September 1973. https://en.wikipedia.org/wiki/Book_burnings_in_Chile#/media/File:Chile_quema_libros_1973.JPG*

Enough is enough. The issue of K-12 Textbooks in Chile cannot resist any longer.

The drop that overflowed my glass was the journalistic research discovered that 1.7 million public textbooks were eliminated in recycling plants during 2013 to 2016, ordered by the Ministry of Education MINEDUC. I can only think of difficult and dark days when books were incinerated.

There is transversal conviction today of the scandal of the K-12 textbook market, and that the conditions that allow it, must change. At least that is what the chilean National Economic Prosecutor's Office (FNE) thinks, a public entity in charge of maintaining and promoting competitive and fair markets, who is studying the competitive evolution of the textbook market, covering both the public and private sectors. The problem is well known, but now we have more precise and, unfortunately, intolerable evidence. In short:

1. The **public market** of K-12 textbooks, the printed books acquired by public resources and distributed through the Ministry of Education, amounts to USD $ 52 Million. This is a highly concentrated market: the average of publishers competing in públic bids the last three years was three, and that in more than 45% of the processes two or less competitors submitted. In turn, 80% of sales are in hands of two foreign companies, Santillana and SM. There are also entry barriers that do not encourage competition: the bidder must submit a complete sample of the textbook, which favors the publisher awarded in the previous bid. In addition, a poor bid framework design was also appreciated.
2. The **private market**, in turn, amounts to US$ 64 Million, covering only 10% of the demand. How is this possible? Simple, the publishers set prices on average 29 times more, and 40 times higher in some cases, in the private market than in the state market, where the unit textbook is normally canceled at USD$ 1 to $ 2,5. These outrageous supra-competitive profits are possible due to the collusion between the publishers and school principles/stakeholders, mainly from private-subsidized dependence (private schools funded by public resources), forcing the families to acquire the private market textbook. For the sake of their children and their education, these families spend an average of US$ 240 per student each year.

How do we get out of this mess? The study undertaken by the FNE, to be published late this month, will provide public policy recommendations that will allow a better and loyal functioning of the textbook market. Alongside, MINEDUC is taking the first steps in "digitizing" the K-12 textbook through pilots testing interactive PDF formats

and the Techbook, product of Discovery Education.

So how we avoid textbooks ending in the bonfire? No doubt, the K-12 Textbook must be digital and open.

Separate content from the container

A key reason for the highly concentrated K-12 public textbook market in Chile is the public bidding framework that involves the elaboration of the contents, the printing of the texts and their distribution. This chain has favored the large publishers and, incidentally, preventing the participation of other publishers, especially, the local publishers. By the way, it also prevents the participation of other actors, such as printing or educational technology companies.

A most important decision would be to separate the educational content from the medium and its distribution, in the public bidding processes. In the case of Ecuador, this separation has existed for years. Its ministry calls for public bidding for printing rights for textbooks already reviewed and validated by universities. This has allowed large and small printing companies to participate, achieving a drop in prices where the unit textbook manages to cost less than half a dollar, resulting in large public savings.

The current model conceives the textbook only as a unique printed book, omitting the multiple possibilities that digitalization of content allows. Digital educational content allows the development of many types of resource outputs, for example, an audio-book, a format for mobile devices, feed an online course or a video game, etc. In addition to those possibilities, many that we can't even foresee yet due to constant technological progress, it is necessary that educational content should be housed in a digital format. This has been one of the key aspects preventing textbooks from innovation, our students today use a similar educational resource used 40 years ago.

In addition, separating content from the container also ensures the durability of the content, breaking the publisher's fallacy of having to redo from scratch the textbooks every two or three years.

Certainly, the K-12 textbook digitalization, complemented by other resources and media and interactive environments, opens multiple opportunities to generate new and innovative ways of using it to achieve learning outcomes. But, especially from the public policy perspective, caution must prevail, decision-making must ensure equity, permanent access for all students, and must ensure sustainabilty, continuity and quality of their development and implementation processes. Is it possible to give a Techbook to all our students? A business model based on individual licenses to access a product or service can be a huge expense, and perhaps more importantly, prevents us from focusing the spending on people and context conditions to ensure effective deployment. We already have frustrated experiencies related to web platforms not to be repeated, as well as for digital textbooks.

Enlaces, the ICT-progam for K-12 schools (and sadly closed at the end of last year) published in 2013 "Digital School Textbooks" for the Technology subject for 1st to 6th graders. Prior to that, there was no textbook for this subject in the public nor private market. The teachers, many of them recycled from extinct subjects such as Manual Technician or French, had to resort to Argentine texts to guide their work. These textbooks actually filled a gap and existing demand and its use was quite successful, thanks to its interactive and graphical instructional design. Unfortunately, these textbooks were removed from MINEDUC last August, as the license to use expired. The textbooks are again accessible for this school year thanks to the renewal of the license, although not the complete textbook, now is a reduced compendium of what it was. And perhaps most sensitive, they are not downloadable, which compromises or rules out the use for the resource in the classroom, because connectivity infrastructure is very limited in chilean schools. Although these textbooks were developed and deployed by public funds, how many more times must we pay to enable access and use of these textbooks?

Public content, must be public

It sounds redundant, but it is not: the educational content housed in K-12 textbook acquired by public resources **is not public**.

Indeed, the direct cause of the private textbook market scandal is intellectual property. The public bid defines that: *The author's rights of the awarded textbooks in public bids will belong entirely to the contracted one, for the effects of free commercialization in the private market …*" That is to say, the publishers postulate a textbook to the public bid, and then reuse a very similar product to be sold in the private market up to 40 times higher than the public price. An "armed robbery" subsidized by all of chilean taxpayers.

Beyond the flagrant abuse of publishers and their pricing policies in the private market, it is worth asking: Why are the content rights of publicly-funded textbooks not public? On the contrary, why are explicitly exclusive to the publishers? Simply because public authority says so.

If common sense prevails, the rights of use of the contents of school textbooks acquired with public resources should be public. As Copyright is the by-default legal instrument to guarantee that "all rights are reserved" to the author, other legal tools, such as the Creative Commons licenses, recognize the authorship but grant and guarantee rights for public usufruct. What kind of public usufruct? To modify a resource to adapt it to a specific context, to extend or improve it, to be able to share it by different means and channels, to be able to integrate it into a pre-existing resource, to be able to integrate it into services or commercial products, etc.

Creative Commons licenses are fully compatible with our legislation and there is jurisprudence in this regard since 2006. There are six Creative Commons licensing options that declare different levels of openness (permitted uses), but there is growing consensus that the most favorable licenses for education and, therefore, textbooks are those that grant broad powers (such as Attribution CC-BY), seeking to create a framework that maximizes the flexibility of types of uses of resources by users. With these licenses, the school text becomes a Open Educational Resource, a concept coined by UNESCO in 2002 that defines it as "*teaching materials, learning or research that are in the public domain or that have been published with an intellectual property license that allows free use, adaptation and distribution.* "

Flexibility in the use of educational content, enhanced by the permissions granted by open licenses, is a central feature given today's current and novel uses of our teachers and students.

Openness could have solved the case of textbooks for students with visual disabilities. The visual disability group of parents, Acaluces, filed a legal injunction against MINEDUC because public texbook in Braille or macro-format never arrived. The Court of Appeals of La Serena issued a ruling in late October, ordering the MINEDUC *"to deliver the textbooks for the year 2018 to the students in favor for whom it is used, duly adapted to their special needs"*. Incredibly, this time sponsored by the Council of Defense of the State, MINEDUC opposed through an appeal to the Supreme Court looking to reverse the first ruling, arguing that "*facing a progressive increase of students with total or partial visual impairment integrated to the school system, there has been no increase in resources proportional to that growing demand."* Luckily, the Supreme Court ratified the sentence, arguing that the MINEDUC *"has not complied with a legal obligation, thus affecting the constitutional guarantee of equality before the law"*.

Conceived as a commons or public good, educational resources are also a matter of social justice. The MINEDUC textbook program can not argue lack of resources, its their technical and moral duty to generate the necessary efficiencies to ensure all our students have access to materials that support quality learning.

Open up to enhance quality

The first alerts related to the malicious K-12 textbook market in Chile was researcher Pablo Ortúzar. His core thesis was that the current vitiated system, both in the public and private markets, is an environment whose competitiveness is focused on reducing printing costs and does not have incentives for the improvement and innovation of the contents of the textbooks. He proposes that the State should be able to buy the content so that it can be converted into a *"public ownership format with free access"* … *"That is important, it will allow an archive of educational materials open to national and international public scrutiny, which will be enriched over time and that may be very useful for students, families, teachers and researchers."* Ortúzar is perfectly aligned to the proposal that the textbook must be digital and open. Please, deepen how openness allows educational resources to raise their quality.

The importance of public scrutiny in relation to quality relies in two perspectives: first, as a strategy for continuous and incremental improvement of educational content, and second, the involvement in that process by the educational community, especially teachers and students. Every quality assurance process involves planned activities such as systematic measurement, comparison with standards, monitoring of processes, all activities associated with loops or information feedback circuits by users / stakeholders / experts. It is not enough to have a standard (benchmark) and its checklist to determine the quality of an educational resource. Its quality lies in an effective and efficient use satisfying specific educational needs, in specific contexts. Who better than the end users, mainly teachers and students, to feedback the use of an educational resource.

These cycles of adaptation/creation, use, crtitique and revision by users, thanks to the openness of publicly-licensed educational resources, conforms a virtuous circle that multiplies, diversifying and enhance educational resources, achieving efficiency in return on investment, raising quality and ensuring future sustainability, and above all, positive impact on student learning.

In a higher education Open Textbook project developed at the Pontificia Universidad Católica de Valparaíso, it implemented two textbooks in formal courses where students contributed to the creation of one of the textbooks and the critical review of another. It was very interesting to rescue the positive experience for students simply by involving them in the development and free use of an educational resource. They recognized high motivation and commitment for the tasks and role entrusted, felt pride and recognition of contributing to a resource that will be used in future versions of the course, went much deeper into the content treated. The teachers involved had to necessarily rethink their work, monitoring the activities of the students, redesigning the classroom activities and how to complement them outside the classroom, in short, innovating in their teaching. This led us to translate to Spanish the award-winning book Guide to Making Open Texts with Students to open up new opportunities.

The University of Cape Town, responsible for an extensive research agenda around the Open Educational Resources for developing countries, defines the virtuous cycle of Open Education in the image below. It is this virtuous circle that can mend the injustices of the textbook market in our country and that these resources do contribute to raising the quality of our education.

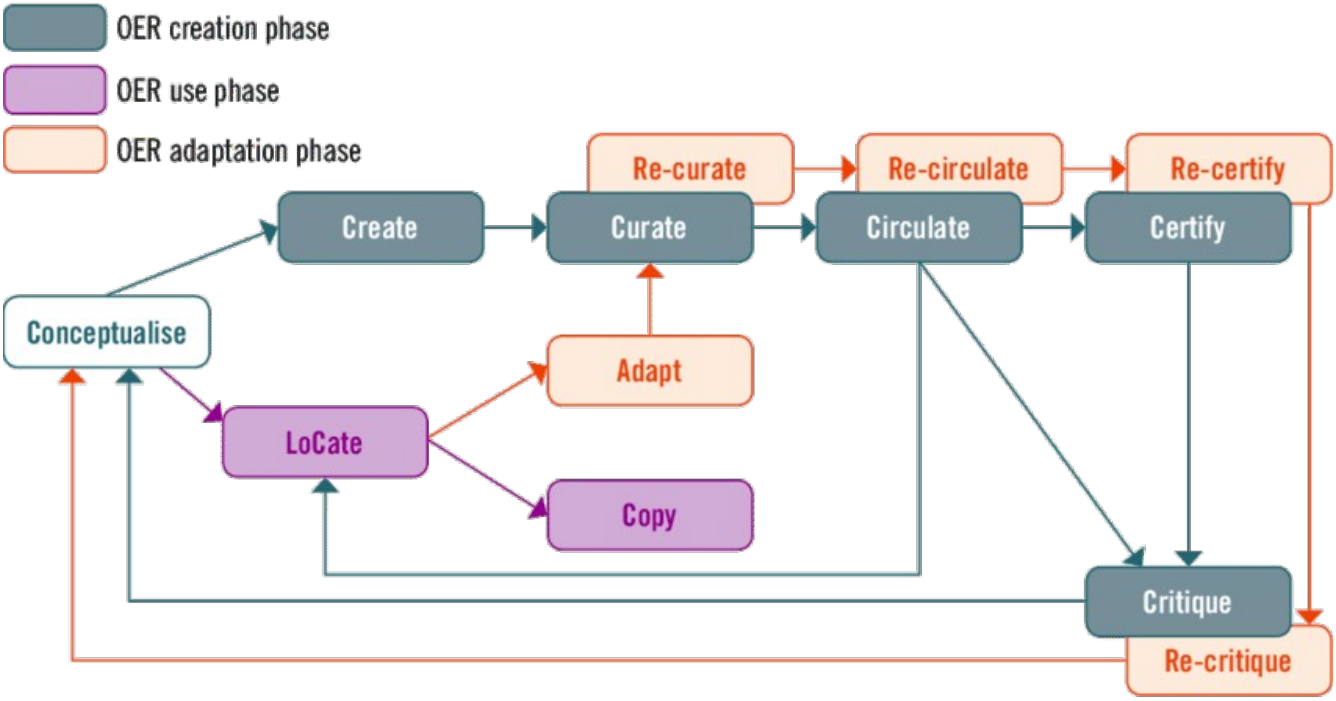

***Image**: Optimal Open Education Cycle, ROER4D. https://www.researchgate.net/figure/Proposed-ptimal-Open-Education-cycle-Adapted-from-HodgkinsonWilliams-2014-oWalji_fig1_323304403*

We have not mentioned the challenges involved in this paradigm shift in how to conceive the K-12 textbook, many of them quite complex, specially for the State as steward of public interest and public goods. Neither have we mentioned previous successful experiences and others not so much. What technologies can support this virtuous circle of Open Educational Resources? How do I manage media and interactive digital resources related to a printed text? How do I integrate a user's contribution and how do I manage this new version to contribute to its continuous improvement? What can we learn from international best practices and experiences?

While awaiting for the FNE's textbook market study, the alternative solutions will be addressed in a new delivery to specify how the K-12 Textbook in Chile must be digital and open.