Did you read the ToS?
A UOC activity to develop critical data literacies

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Introduction

Last year, Edul@b implemented an experimental activity aimed at raising awareness on data tracking, privacy and ethics in the context of Digital Competence.

Our team had been reflecting on the relevance of cultivating critical digital literacies through our participation in the EU project DETECT (Developing a Digital Critical Literacy in Teachers). We had also been studying data literacy in higher education through the research and dissemination activities at our programme Fair Data Cultures in Higher Education .

Our concern stemmed from facts driven by the rapid technological development relating to data in society and, specifically, in education. A phenomenon that the pandemic intensified. Indeed, the last year we observed that the increased access to digital technologies and social networks created unprecedented educational challenges, which as societies, we are called to turn into opportunities. Therefore, as committed educators, we Edul@b group started thinking about activities with our students that might develop understanding and reflection on the problem.

As a research group, in the last twenty years we have been engaged in working towards technological uptake. We have been observing and accompanying the schools, businesses and the public sector to embrace the Internet and hence the digital platforms (including social media). We were convinced that technologies facilitated professional activities, learning and interaction; that promoted the professional development of workers and supported online conversations between users, institutions, and all sorts of stakeholders' networks. While undoubtedly useful, we have also witnessed that more recently, digital technologies' intense use (mainly triggered by the massification of mobile devices) challenged existing institutional practices and cultures and raised questions regarding the type of digital competence needed to operate in such contexts.

As educators, many of us were convinced that such a competence should ensure that digital technologies could be used in personally and professionally meaningful ways to support entrepreneurship, creativity, communication and collaboration, as well as lifelong learning, even leading to the generation of an identity linked to the digital contexts in which one "lives" (Romeu, Guitert, Romero & Bruguera, 2016). However, we (educators) realised in the pandemic aftermath that excessive or unreflective use of technologies entailed many psychological, social and ethical risks, which require critical reflection. A reflection leading to understanding the platforms' business models,

particularly concerning the invasion of the user's privacy to monetise the extracted data in the form of new products and services.

A compelling need of reflection, some point out, because platforms do not always operate transparently or use data in a fair and ethical manner. There is indeed a pressing need to cultivate "a critical disposition in a context where technical competence is prioritised" (Raffaghelli, 2020).

We still believe in the importance of acquiring technical and communicative skills. But we also claim (together with many other educators) that improving the critical disposition of users can generate a movement to care for privacy, to engage in technological development that respects the human and social side. These skills are also transferable through digital contexts and, therefore, very relevant, from the personal sphere (e.g, the use of apps that "quantify the self") to the social and political fields (e.g., forms of engagement in social networks connected to citizen and political participation).

These have been the foundations to design this learning activity, with the aim to deepen on the students' awareness relating to critical aspects of frequently used digital tools (websites, software and apps).

The activity: Did you read the ToS?

Approach

Our learning activity was quite simple: revising the Terms of Service of one digital tool of the students' choice. Our inspiring muse was Bonnie Stewart and her "Open Page" project, where she creatively co-reviewed the ToS of a set of digital tools frequently used by primary school teachers. Reading the ToS is a very simple request to understand the basic conditions of usage imposed by digital technologies. In a highly digitalized society, there is pressure on us to take part in joint activities at work, spare time or family spaces that are based on spread technologies *("We use this app at work, it will help you save a lot of time"; "Everybody in the family uses this instant messaging app, you'll have to reach us…"; "Didn't you hear from that fact/event? It is on X social network everybody uses"*). Therefore, we frequently overlook the ToS in search for what we need: technological mediation of our personal and professional activity.

This situation has led to low awareness on the way the technologies change overtime and the increasingly concerning ways into which we, and particularly our data became the product. There is an ongoing debate, but it appears to us that it is central to generate "critical audiences" (we borrow the concept from Daan Kolkman), in the sense of people prepared to deal with the oddities (using a euphemism!) of automated, data-driven systems. Higher awareness means the ability to avoid, hack, or report inappropriate terms of service, enacting participatory mechanisms from the civil society or the public space to discuss, contest or repair damages.

Our activity was just an initial step in preparing people to deal with the less cared side of most digital tools frequently adopted. **Figure 1** shows the workflow we proposed to the students.

The workflow starts with the student's selection of a digital tool frequently used. This choice has to be made upon some criteria to ensure that we will have the basic information at hand to explore some specific dimensions proposed: information about the tracked data, temporality of the conditions requested to the users to adopt the

digital tool, copyright and user rights on the contents generated, updated reference to national or international regulations, existence of critical cases of usage. We hence offer an online survey to the students to perform their analysis. This approach is aimed at focusing on areas of evaluation of the digital tool selected. The tool also supports the final judgement assigning an automatic score, which values might vary from 0 to 85. This is the sum of scores from 1 (unclear or abusive ToS) to 5 (very clear and respectful ToS) for each question on the digital tool. This scale is hence converted into "badges", assigned as final representation of the overall quality of the Terms of Service regarding the digital tool analysed. The scores and badges were characterised as follows:

- **+ Gold ToS.** The digital tools under this badge offer the best terms of service: they treat the user fairly, respecting their rights and not abusing of the users' data. Technically, the evaluations in any dimension arrive to 5 in all the questions that the students will have answered, with a score that is placed between 72 and 85 total points or 90 to 100% of the questions answered (partial gold).
- **+/- Silver ToS.** The terms of service are fair to the user, but could be improved. The specific evaluation per dimension is placed between 4 and 5 with some case of 3, obtaining a total score of between 64 and 71 total points or between 80 and 89% of the questions answered (partial silver).
- **× Bronze.** The terms of service are fine, but some issues need the user critical consideration. The evaluations are placed between 3 and 4, obtaining a total score of between 56 and 63 total points or between 70 and 79% of the questions answered (partial bronze).
- **O Tin**. The terms of service are very uneven or there are some major issues that require your attention. The evaluations are generally placed between 3 and 2, obtaining a total score of between 36 and 55 total pts or between 45 and 69% of the questions answered (partial can).
- **! Scrap.** The terms of service raise very serious concerns. The evaluations are placed between 2 and 1, obtaining a total score of between 14 and 35 total points or between 17 and 44% of the questions answered (partial scrap).

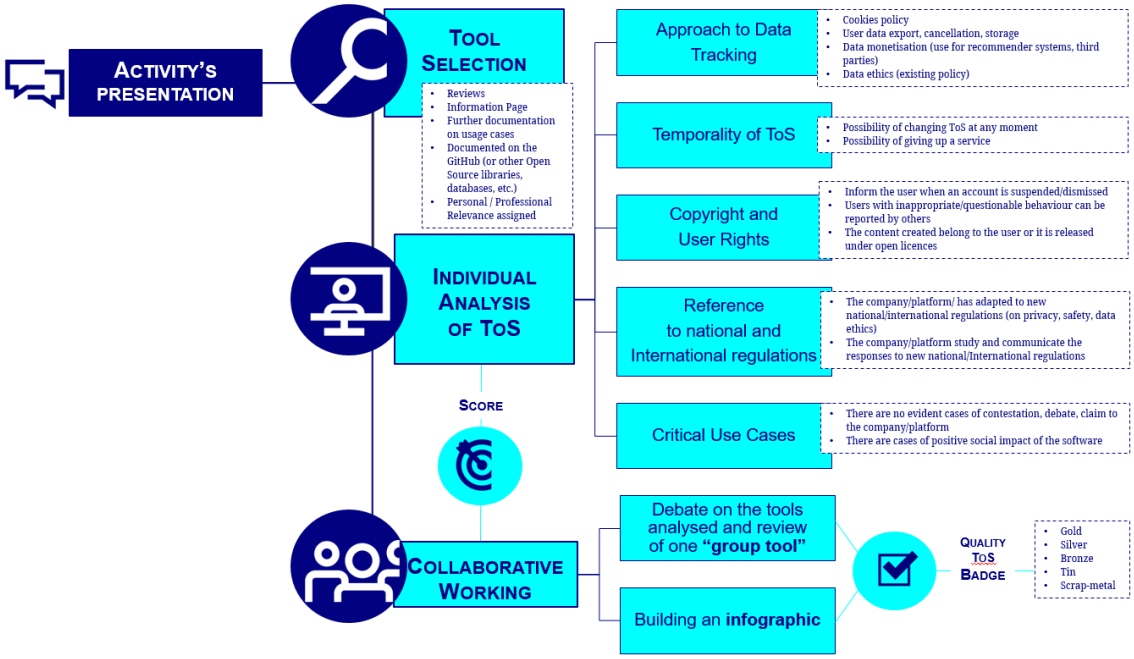

Figure 1 – Workflow of the Learning Activity "Did you read the ToS"?

We hence asked the teachers' their opinion on the activity and the students' engagement, as well as their own position regarding the ToS of the educational tools adopted within the UOC classroom.

Participants

We invited all the students at the UOC ICT Competence course. This is a general, initial course that all the UOC students have to take, and it is preparatory for the further fully online study activity. The course has a story long 25 years, and data literacy has been a relevant part of the recent developments in the course. One of the very interesting aspects of this course is their interdisciplinary nature since the students from several courses get together to develop a technical, creative, collaborative, inclusive and last but not least, critical approach to the use of ICTs. The current activity was offered on a voluntary basis, since it was a pilot which could end up in a stable element according to the results.

Overall, 27 Course Instructors offered the activity. We collected 823 student's responses, from which 702 were complete and correct for analytical purposes.

Preliminary Results

We prepared an interactive Tableau Workbook for the curious people willing to interact with the rich information we collected.

In this post, there are just highlights of our findings, on which we are working to programme further activities and as part of research activity on critical data literacy.

Let's see what happened!

The participants' profiles

The students' gender, age and professional experience were very much aligned with the overall characteristics of UOC students. There is a relevant group of young "worker students" in search of better qualifications for their professional life. There is also another interesting, relevant group of "seniors" pursuing probably their second opportunities in life.

Take a look at the smooth but interesting differences relating Course and Gender, Age, Professional Experience. We also explored some relationships!

The Fig 2. Reports an interesting one: Gender and Professional Experience per disciplinary area.

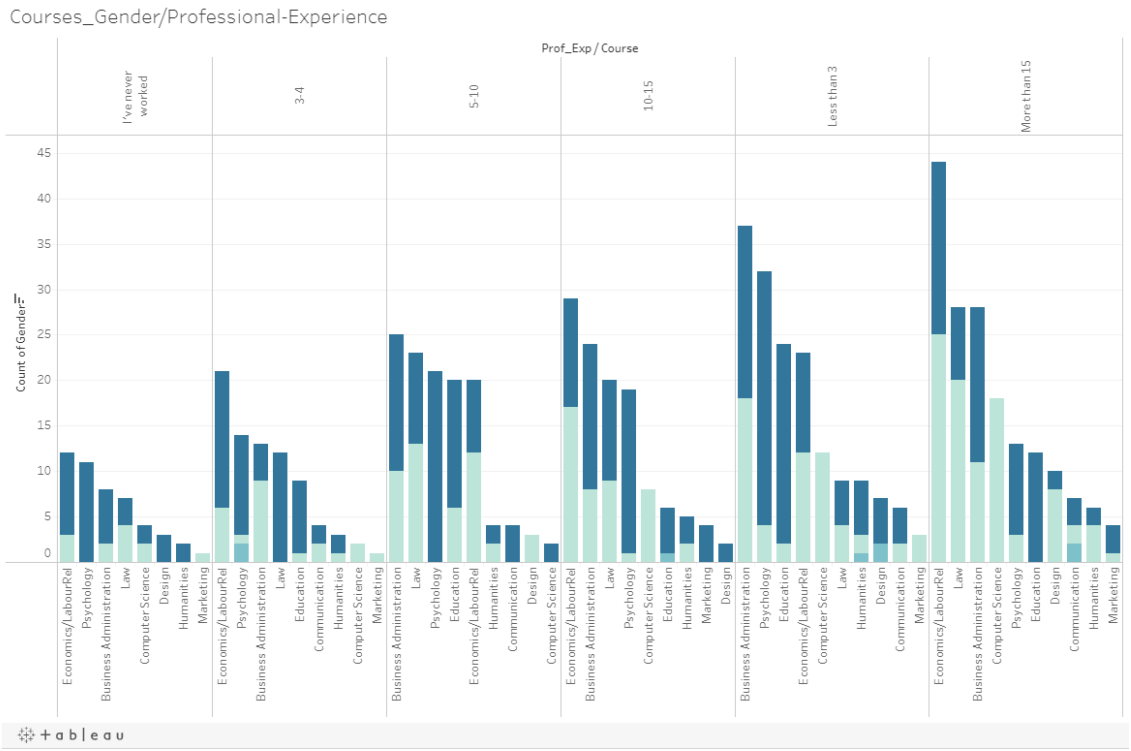

Figure 2 – Our participants: gender and professional experience per disciplinary area.

The Digital Tools' choice

Now we move forward, on the first exercise's step. The students' analysed 122 digital tools, between apps, websites and software. We were impressed with the myriad of digital tools our students "live by" and in spite of a high prevalence of GSuite, WhatsApp, Instagram and Facebook, we observed that they preferred the tools that allow them to collaborate, communicate, network and create. These digital tools' functions prevailed over individual productivity, entertainment, eCommerce, learning, health, sports. But an eye over the different disciplinary fields let us see there are some differences. The relationship between the courses and the digital tools can be explored here. Another interesting element was that there were very few choices for apps or software specifically devoted to the Internet of Things (IoT, only chosen in the case of the wearables for sports practice) and no choices for specific AI programmes (from home assistants to data science programmes).

ToS Quality under the lens

Figure 3 (full visualisation here) displays just a part of the complex picture got in terms of the students' evaluation of the ToS. We observed that the students were cautious at the time of evaluating the ToS and that the ideal conditions were met by very few (like Slack, Thunderbird or Genially). There is much to understand about this picture: elements that could be further explored are a relationship between the relevance (for our personal or professional activities) and the scores assigned. The information available was never considered ideal (4 points). Probably many tools did not cover the fourth quality point: sharing openly their code (Open Source).

Want to explore and compare the several areas of quality? We prepared interactive visualisations on the information provided to the user on the techniques of data

tracking, the temporality of application of the ToS, the available information around the compliance with national and international regulations and the cases of the negative or positive impact of tools' usage.

But there is more: our students prepared a synthesis on the ToS quality which we can explore for each of the 122 tools under analysis, accommodated under the categories of "functionality" or usage.

Go and take a look!

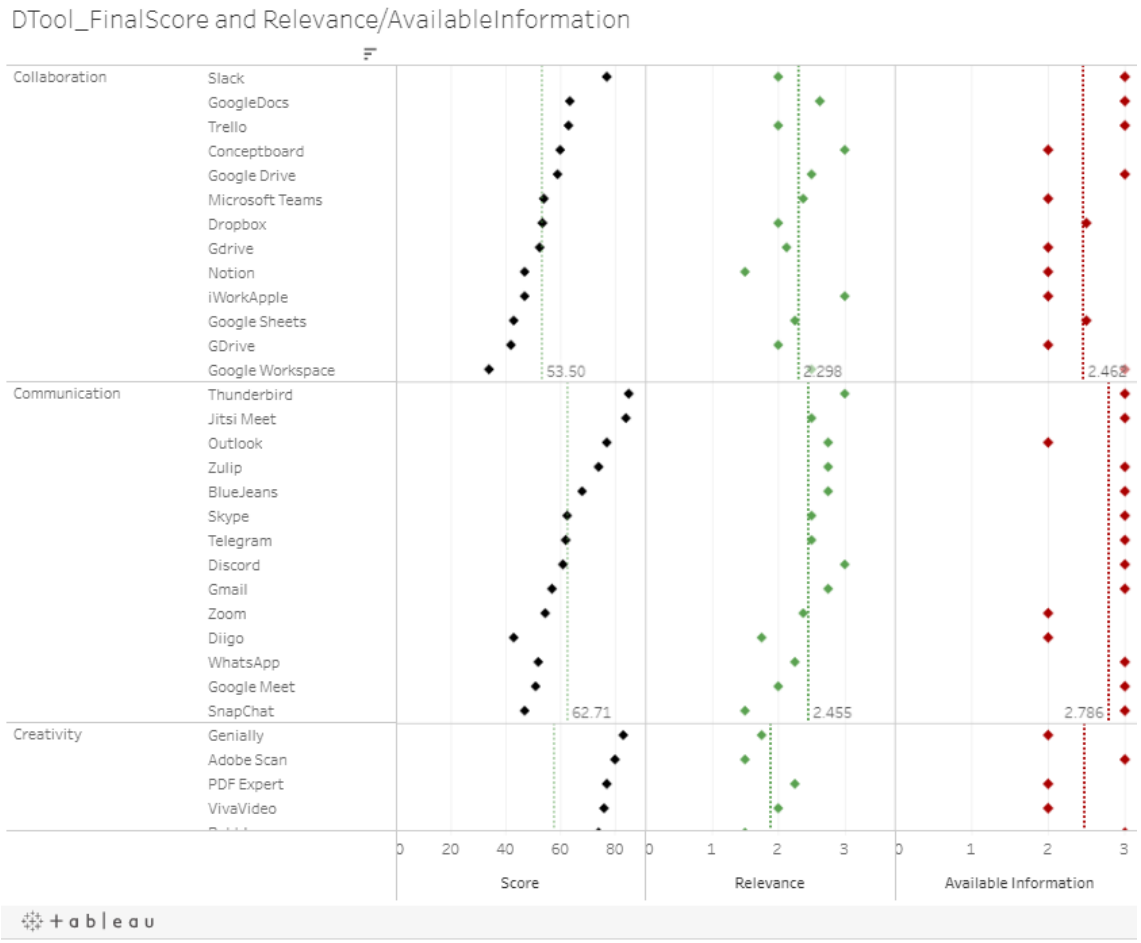

Figure 3 – An excerpt of the work done by the students: Digital Tools Score, Relevance (for the students) and Available Information.

Overall, the girls tended to be more benevolent than the boys in giving scores, even though both groups were very rigorous in their analysis (57 vs 53). The worst performers were the tools connected to individual productivity (like Office) and tools relating eCommerce, but also social networks were below the average score. The best ToS quality was achieved by tools relating Health (girls) and Learning (boys and others). More specifically, the girls from Communication, followed by those in Design and Education were the most positive against the very cautious approach of the girls in Computer Science. As their female counterpart, the males from Design were positive, followed by those in Business Administration and the rest. Instead, the males coming from Humanities and Psychology were rather negative.

Do gender stereotypes play a role in the way we approach the digital tools we use more? This question requires further analysis and dialogue with our students.

As for the age, we probably expected the following result: the seniors (45-54 and those aged more than 55) were more suspicious relating the tools used (av.sc. 50.5 and 48.4 respectively). The under 25 people evaluated more positively (av.sc 59.25). In the middle, young people to middle aged (av.sc. 54.6 and 54.8).

And finally the BADGES!

We analysed the results per age; gender; professional experience to explore if these elements were relevant at the time of being more or less reliant on the ToS of the tools analysed. The badges, indeed, group the scores in categories covering a range relating to the level of quality. We did not found relevant differences at first sight. It appears that independently of the age, gender or professional experience, our students were cautious in assigning the "gold" or "silver", with more cases falling under tin and scrap! A relevant number of "bronze" badges were also released.

But when coming to analyse the digital tools function, it was evident that the eCommerce, Individual Productivity and Edutainment tools were considered rather unsafe. They were followed by Social Networking, Entertainment, Health, Communication, Collaboration, Information Management, Creativity (in that order). The most virtuous categories (with more gold and silver badges) were Sports (with very few votes, though), Learning, Creativity, Entertainment (!) and Health. Fig. 4 shows this situation.

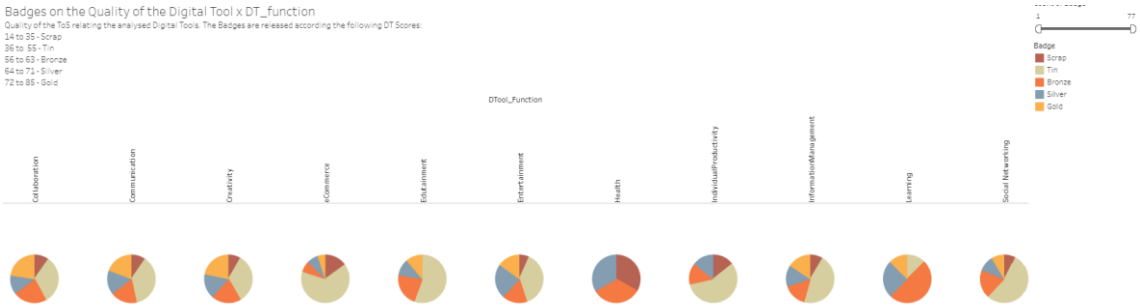

Figure 4 – Badges assigned to the Quality of ToS

The Course Instructors' reactions

Overall, the course instructors (teachers) considered that the experience was relevant, though there were issues concerning the timing, the difficulty of the task, and the fact that the students engaged only partially (not all of them took part). If we consider the Students' Engagement vs. the Teacher' opinion on the Activity, we observe that the teachers with a good level of experience (10 to 15), as well as those with less than 3 years of experience, considered the experience relevant and interesting, while also observing good students' engagement, though very relative (not all the students participated). The rest (3 to 5 years of experience, 5 to 10 and more than 15) were more concerned as teachers on elements of the experience (particularly the complexity and the timing), but they either observed an overall good students' engagement. Most interestingly, the teachers whose professional profiles related to administration, senior technologists and adjuncts with more experience in teaching in higher education (and probably with eLearning) evaluated more positively the experience than the secondary

school teachers, managers and researchers. Those with experience in teaching, of any kind, considered there was more balance between their opinion on the quality of the activity proposed and the students' engagement.

However, the most interesting element coming from the teachers' group regards the comparison between their approach to the educational technologies, their approach to the ToS, their professional experience, and the evaluation of the whole experience in this activity. Here is the table relating professional experience as a pivot, and here, the table relating Professional Activity beyond teaching

Less expert teachers (less than five years) tended to be less concerned on the ToS. Their approach to both the educational technologies and the relating ToS is more instrumental (The tools are "useful" and we must "improve their usage") with less concern about data tracking, profiling or other problems relating privacy. Some of them were even ready for a "trade-off" between the need of a technological tool and the risks the tool implies. They evaluated the activity a little bit less positively overall.

More expert teachers were more cautious and aware of the risks. They mentioned the need of revisiting the privacy issues, to reflect on the problems of data tracking and data ethics not only beyond the classroom but also within it.

Again, there were also differences according to the professional activity beyond teaching at UOC. The teachers, also working as senior technologists and researchers, were much more cautious and concerned about the problem of data privacy for all the tools adopted (educational and professional overall). The secondary school teachers, managers and the administrative staff felt safe and adopted a more instrumental approach. The group of adjuncts was more concerned about the educational applications and platforms than relating other tools.

(Very brief) Conclusions on an ongoing work

According to this preliminary analysis, along this exercise our students showed awareness of the problems relating the rather obscure terms of service that we accept every day when using digital tools of relevance for our personal or professional life. They demonstrated a cautious approach which could be based on understanding, after this exercise, of the several quality checks that a digital tool should cover to be considered a safe, fair, ethical when coming to the way it enters into our private worlds, and the way it makes a business from it or not. The students considered that the information provided is not excellent overall. Needless to say, it is difficult to read, once found.

Nevertheless, they must accept. This is the evident downside: we need digital tools for many professional and personal activities in our hyper-connected, networked societies. Therefore, it appears mostly impossible to criticise or ask for more information, given the vital relationship we establish with many of the tools adopted.

However, there were nuances: some users could be more reliant and even naïve when approaching digital tools, whereas other, given their professional expertise, have been probably exposed to the more critical aspects of the most spread platforms. One particular issue is the fact that the use of platforms is frequently imposed at institutional or community levels. And the more we are constrained by cultural or organisational contexts, the more difficult is to adopt alternative pathways taking care of our technological sovereignty. This tension appeared clearly along our students and teachers' responses.

We did not intend with this exercise to disentangle the many complex relationships behind the use of technologies in our contemporary society. We believe (after David Buckingham!) the society will have to search for a balance between regulating digital tools. This entails a complex educational approach to the idea of developing digital competencies, not only intended to criticise harmful practices spanning from the individual (digital overexposure, cyberbullying) to the platforms policies and business model (data monetisation and institutional monopolisation).

But awareness-raising is, doubtless, the first step in our educational endeavour to develop critical audiences, in an educational approach that could be considered "relational", borrowing the relevant concept introduced by Linda Castañeda and Ben Williamson.

We are ready for that challenge.