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# Towards a Digital Ecosystem

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## Introduction: What is technology?

When talking about technology, we immediately think about all the technological devices that surround us daily, such as a toaster, a blender, a washing machine, a TV set, a mobile phone, a computer, a tablet, a DVD recorder (and why not a book or a pen), as well as so many other appliances that contribute to make our chores and lives much easier. However, technology does exist since we have memory, i.e. since the human race was forced to create out of necessity. For instance, we could include, under the category of **technology**, all those simple artefacts like an arrow, a knife, a cart, or a cup, amongst others. This can be seen in a YouTube video - [https://youtu.be/GPI1O\\_3BDDI](https://youtu.be/GPI1O_3BDDI) - that shows some scenes from the movie titled “The Gods must be Crazy”, a movie which will delight all of us with a surprised protagonist who encounters a mere *Coca Cola* glass bottle.

On our etymological exploring of the word *technology*, we will find out that the term derives from the words *technos/techné*, which mean “the art of making”. It is precisely by means of **making** that man has adapted, and is still adapting to their environment and trying to solve their domestic problems while creating new technological devices. It seems that technology has increased our abilities as a human being. Nevertheless, while on the one hand technology facilitates our life, on the other, it slowly takes possession of it. Usually we may become addicted, which means that it is sometimes impossible for us to survive without our technological appliances, especially if we consider the locative and temporal context of these times.

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The new ICT on the palm of our hand

### 1. Technology and Education

To begin with, our main doubts are strongly related to education and the use of technology in our classes. In fact, our first questions read as follows: Which are the benefits that the new technologies bring to 21st century teachers and students? Which are the obstacles that appear along the educational path and are continuously interfering with those so-called benefits?

With the coming of 2020 pandemic, all the educational community (and here we may include all its members, i.e. teachers, students, parents and school authorities, and others) was forced to make use of a computer, tablet or mobile/smart phone in order to continue with the teaching-learning process. The emergency of that moment led us (and why not say that it also motivated and encouraged us) to apply the new ICT even when our ability to use them was far from its effective use. Also, it invited us to become more interested in learning via tutorials, videos or virtual meetings, and in unravelling the pros, virtues or advantages of these devices to simply make the most of them while delivering our lessons. As regards students and their families, the ICT arrived to turn our homes into laboratories, classrooms, offices, workshops and even factories. Buckingham (2017) confirms this by saying that *"There is no doubt that current technology is more present than past educational technologies"*. Now, our doubt is posed on whether the school, as an institution, may disappear in the nearest future or not.

According to David Buckingham (2007, p. 225), this is just an illusion. In fact, educational institutions, just as we know them, will be able to survive, though this time they will be accompanied by the infinite variety of technological tools that are capable of favouring education without necessarily threatening the vital role of books, newspapers, libraries or schools. It is evident that we teachers are getting into an innovative way of teaching and learning, communicating and interacting, which goes beyond the classroom walls, turning education into a hybrid process. It is a process that has already transformed school culture, resources and materials into a new type of culture known as **digital culture**. It is obvious that, little by little, we are walking towards a type of future that demands other spaces, areas or

facilities that we should definitely accept, and to which we will inexorably have to adapt.

## 2. Some risks

*"To a certain extent, the use of information and communication technology at schools has nothing to do with the ways in which today young people relate to each other with information or the ways they choose to communicate. The risk that this situation entails is that the school ended up having less relation to the real interests and concerns of young people."* (Buckingham, 2007, p. 226) What the author is trying to tell us here is that the quality of our teaching strategies is neither associated to the latest innovative technological devices, nor to the combination of education and entertainment.

*"Children in general exhibit a considerable lack of interest in these recurring attempts to 'make learning fun'"* (Buckingham, 2007). Actually, 21st century schools should go further and, with the appropriate implementation of educational policies, as well as with a curricular flexibility that implies the active participation of students, they should break the barriers of social inequality and recognize the fact that this is not a simple attempt to **technify** education, but to teach and train all those who attend schools and need to prepare themselves to cope with the social challenges to come. This is the reason why we teachers should reflect upon our pedagogical practices, revise strategies, and analyse global changes, so as to help our students become critical and competent, creative and capable of making their own decisions and adjusting to the pounding of social and economic changes which, like pebbles on a road, will turn into obstacles as soon as they leave secondary school and try to get into the labour or university worlds.

It is clear that the school as an institution will not disappear. As the author says, *"Ultimately, we need to stop thinking in terms of technology and start thinking about a new approach to learning, communication and culture."* And I would venture to add that we should not forget about values and bonds, inequalities and emotions and, above all, human relationships.

## 3. The digital ecosystem: its meaning, significance and relationship with education

In order to comprehend the concept of **digital ecosystem**, it is important that we have a look at the **media ecology** metaphor, a theoretical framework which has been regarded as transmedia theory according to Scolari, who says that

It encompasses, depending on the chosen theoretician-enunciator, almost all aspects of communication processes, from the relations between the media and the economy, to the perceptual and cognitive transformations that subjects undergo as a result of their exposure to communication technologies. (Scolari, 2015, p.17)

The media ecology metaphor –i.e. the study of media as environments- dates from the 70's and was mentioned by Neil Postman during a conference in 1968 (though it had already been employed by McLuhan in private circles). This concept became more visible in 1971 when it was introduced at the New York University. The actual meaning of the metaphor acquired its value between the 60's and the 70's, when the concept of ecology was starting to become more popular and, therefore, the metaphor of technologies regarded as environments gain relevance due to the fact that communication technology was understood as the *"environments that affect those people who use it"* (Scholari, 2015).

On our historical research of those theorists who have really devoted their time to studying and spreading bibliographical material related to media ecology, we find **ecologists** like Lewis Mumford, whose ecological view was organic and technological, highlighting life and survival in opposition to post-war industrial ideas. Jackes Ellul, for his part, focused his attention on the damage caused by propaganda and its persuasive power, which coincided with McLuhan's perspective, though the latter theorist was more worried about the media than the social environment. In fact, his argument shows us a type of media ecology that has become an environment full of emotions, as if it were an oceanic world in which we people interact with the marine life; a perfect metaphor to make reference to the technological instruments. However, if we desired to recognise a true revolutionary theorist of the ecological conceptualization of the media, we cannot forget Neil Postman, a teacher of English who was capable of turning everything upside-down and who, thanks to his *"ecological change"* slogan, could set a parallelism between the first European printing press and the USA television. Postman, in fact, confirmed his **ecological change** hypothesis that the coming of a new device means changing everything rather than adding something to the previous things or inventions (Scolari, 2015).

Keeping the track of our technological timeline, we can venture to say that the fathers of **media ecology** were followed by their disciples, a generation of nouvelle investigators who invaded the beginning of the 21st century in order to continue delving into the influence that the new ICT exerted on information transmission and digital communication. Amongst them we will find American academics such as Lance Strate, Joshua Meyrowitz and Paul Levinson, all of them –from a scientific scientist perspective- worried about solving the metaphor of the ecological media and its influence on postmodern communities. What is curious about this metaphor is that it arrived with the 70's environmentalists, who succeeded in imposing a fashion that gave origin to a series of disciplines such as *"biosemiotics, biolinguistics and ecology anthropology"* (Scolari, 2015, p.29)

To think about media ecology today would help us understand better the impact that both the ICT and communication media exert on their consumers,

especially on students. We should bear in mind the idea that more than a new invention that we might include on the list of the revolutionary inventions, we are facing a change of paradigm capable of letting us interpret the concept of environment and explore its benefits on behalf of communication, interaction and, above all, education. It is indeed a change that has come to stay and replace traditional (why not archaic) obsolete pedagogical practices that claim for a change, (not a radical one, by the way), but at least a type of change or a twist that will demonstrate that its users –especially teachers– are capable of squeezing technology and making the most of it. According to Albarello (2016)

Perhaps it seems certainly difficult to think of the educational school, the university or the institution as a medium, and even more to think of it from the evolutionary logic proposed by Media Ecology. But if for a moment we assume that view, with the risks that a metaphor imposes to explain reality, we can say that the educational institution in general is facing the challenge of evolving and adapting to the new scenario, to the new environment that has been modified by digital technologies. (p.130)

Scolari (2015) explains the two ways of interpreting the ecology metaphor when he introduces the media as environments and species respectively. On the one hand, as environments, we should take into consideration the fact that we are immersed in them, and at the same time, they become part of our ideas and way of thinking, for they invade our emotions and habits so as to disassemble us, either positively or negatively, in the same way that the radio and the TV set did when they first appeared. In fact, it is happening these days with the latest arrival of the internet, the nets and the apps. On the other hand, we have this concept of species, i.e. the media and the ICT seen as the members of a huge ecosystem in which they interact, they support each other, develop, grow and go ahead as if they were nets which tend to move side by side, but also intertwine and feedback all the time.

Though conscious about the importance of using technology in class, we teachers have foreseen an aura of risk that daunts us and haunts our practices and our students' performances. Multimedia, hyper-information, net revolution and apps are only some examples of the various situations that come across while walking along our educational paths. In fact, it is extremely important that we analyse technology and consider it at the moment of planning our activities and actions. Being against technological resources would mean sailing close to the wind, which will definitely be counterproductive. Scolari (2015) proposes reading the works of authors like McLuhan, Postman, Ong and Havelock so as to appreciate the value of their words, words that will be truly helpful at the moment of struggling against the inconveniences that the ICT or the media can generate.

It is interesting to appreciate the fact that there exist difficulties, obstacles and limits that are actually more related to the status of media ecology than to the environments and species themselves. The bibliography on this theme does not go deep enough to convert this new scientific field into an epistemic construction, according to Scolari (2015), or a discipline capable of competing with others such as History, Psychology or Sociology. Besides, there is not a methodology to approach this type of ecology. In spite of this panorama, and as the result of an abrupt change in our teaching strategies due to the pandemic, we should be brave enough to register the benefits offered by technology and start to cooperate with that theoretical construction that Scolari mentions in order to reinforce this **nouvelle ecosystem**.

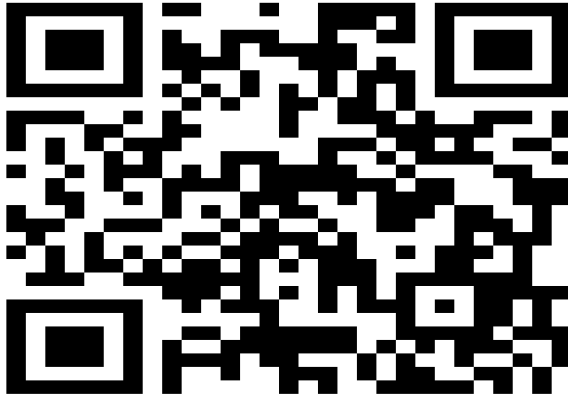
### Conclusion

To conclude, I will start my reflections upon this fascinating but broad and controversial topic (Technology) with the testimony of a secondary school teacher who answers two of my questions in Spanish:  
<https://padlet.com/ppolicastro2/wk2zl662p0os5f63>

I also accompany these reflections with the assignment of my 5th Year students from Dante Alighieri Secondary School, located in the city of Belén de Escobar –in Buenos Aires province, only 50 kilometres away from CABA. Those young people were motivated by the possibility of participating at the Science and Communication School Annual Fair. There I could discover how those young people have become part of a digital ecosystem by merely putting into practice their technological knowledge.



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Finally, I end up my paper on this uncertain, overwhelming and never-ending topic, with an appropriate quote taken from Albarello's work (2016, p.20)

[...] the exercise is useful if we agree that the educational environment has been transformed in recent years and that new strategies are required to teach and provoke significant learning in young people [...] to then ask ourselves what other technologies can enter the classroom, so that it becomes a true media ecosystem at the service of education. We must ask ourselves with which medium we best teach certain content, to put these means at the service of pedagogy, and not the other way around. [...] The challenge is raised: any effort we make in this direction will bring us a little closer to the reality of young people, and we will be able to establish bridges of familiarity between the classroom environment and the daily environment in which they live. "



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