

EdTech Myths: Towards a critical digital educational agenda

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EdTech Myths: Towards a critical digital educational agenda

Abstract

Myths are universal narratives linked to objects, shaping social and personal identities. Technologies generate modern myths, influencing choices and impacting our lives. The present study focuses on EdTech myths. From a qualitative methodological approach based on codesign, five relevant EdTech myths are identified. Subsequently, the analysis was carried out from (1) a hermeneutic approach, based on the authors' experience in the field of EdTech, and (2) a review and contrast of relevant scientific literature. The results explain, firstly, why these myths arise and persist in EdTech; secondly, the study can help to demystify them. In general, EdTech myths deteriorate digital-technology-mediated education because they consider it from an extensively reductionist perspective, especially from EdTech capitalism. This is why we need to pay more attention to EdTech myths, to set up an educational agenda leading to action categories and the critical transformation of the education-technology relationship.

Keywords: edtech, myths, digital society, critical perspective, digital education

Introduction

Myths are part of the way we represent ourselves and the world, everywhere in the globe and at all times. We are no strangers to them: they build us, they make us. However, from an in-depth study of magical and religious myths, Eliade (1991) warned that “myths are an extremely complex cultural reality, which can be addressed and interpreted from many complementary perspectives” (p. 6). Whether we look at their sacred function or elsewhere, myths are always narratives that carry meaning (Vercellone, 2020). As cultural narratives, myths “inhabit” the different forms of language expression. They are not uniform, nor do they perform the same role, but they certainly provide meaning and have an effect on the way we act and represent the world, as well as on our expectations of how our behavior should be (Campbell 1988).

Myths have been traditionally attached to a vision of the origin of universe, the natural forces and the human beings. However, contemporary studies of cultural and media have adopted the term to uncover how distorted narratives that favour or facilitate power structures can become also myths. . In his semiological work about media Roland Barthes purported that mass media might be manipulating narratives to detach them from contexts and historical processes. In short, “I suffered from seeing nature and history constantly confused in the narrative of our present day, and I wanted to reveal the ideological bush which, in my opinion, is hidden in the decorative exhibition of the obvious - for - itself” (Barthes, 1957/1999, p. 6). Barthes (1957/1999) contends and goes on saying “from the beginning it seemed to me that the notion of myth accounts for these false shreds of evidence” (p. 6). Therefore, in this authors’ terms, exploring “ a certain number of current events” can lead to “define the contemporary myth in a methodical way...” (Barthes, 1957,1999, p. 6).

Most importantly, for Barthes contemporary myths can be considered a “depoliticised speech act” (p. 141).

More recently, Ortoleva (2021) calls these contemporary myths, which rather than rituals are objects of consumption, "low-intensity myths" that enjoy meaning in personal life and civilization. These myths - where we will place edtech myths - are fed by "dream factories" that consolidate narratives through the media that are no different from the circulation and production of commodities. The problem, regarding myths, is that "we often think of false beliefs or stories that are told that do not necessarily reflect real events, but can become powerful mediators within social, cultural, and political life that can give meaning to the identities, practices, and morals of communities" (Obradović, 2021).

In our current context – marked by a global pandemic that has upset the daily lives of almost the entire human population and virtualised most productive and social processes – we purport there is need to disentangle contemporary myths relating to the power of technologies. ?

Mosco (2005) argues that each age was characterised by its own technological myths. They are not exclusively modern; they go back to the very dawn of civilisation. Mayor (2018), for instance, highlighted the great difference between ancient myths about gods – who were born, rather than created – and myths about robots – who were created, rather than born. Coming back to the present and according to Raynaud (2018), in the current digital ecosystem, humans find confirmation elements in these myths (born from promising narratives about particular technologies) that can render searching for proof apparently unnecessary. The question, however, is not how we can refute these facts, but realising that an opposite fact would be enough to reject them. The human search for confirmation of a message affects the way the myth is accepted: a validating argument is often enough.

A promising, yet hegemonic, narrative is linked to the relationship between education and technology: the latter is always deemed a solution and it is never questioned as far as learning is concerned (Hayes, 2015; Jandrić, & Hayes, 2020). And that is exactly why this narrative should be further investigated: it usually serves commercial interests as it focuses on extolling a neutral, global and effective appropriateness while neglecting the context, subjects, purposes, users' interests, adverse effects and other areas that define educational action (Njenga, & Fourie, 2010). This enthusiasm, rooted in technocentrism and technological determinism, is reinforced and fed by the contemporary myths (Friesen, 2008) which, supported by the press, social networks or marketing plans, disseminate a technopositivism (Njenga, & Fourie, 2010) that overestimates the technological attributes of education and learning. In this sense, edtech myths are part of this biased and simplifying narrative on the educational potential of digital technology.

Challenging this biased narrative about edtech myths, as well as admitting that educational transformation is deeper than technological application alone, becomes the main aim of this demystification process (Harmes, Huijser, & Danaher, 2015). In addition to the epistemological need to clarify the real role of technology within the educational context, which is now blurred by edtech myths, it is fundamental to open a critical pedagogical debate on technology in order to recover the teleological vision of education, i.e., not as a technological project, but as a human project. Exposing fallacies through evidence and arguments is tantamount to understanding technology in education, with its advantages and dilemmas.

Therefore, in order to move from the mere use of technology towards a process of educational appropriation, it is necessary to explain, among other things, the symbolic universe of these myths, which create and recreate an object of analysis themselves.

Taking this into account, there is a need to explore the digital education language and emerging concepts that are more than just *flatus vocis*. This need for a critical look on digital technology is also present in a wide variety of previous works. Each EdTech concept entails epistemological and ontological frameworks that make it possible to theorise and intervene in the way individuals learn in today's society, both at the macro- and the micro-educational level (Pangrazio and Sefton-Green 2021). According to Ornellas and Sancho (2015), the world of incorrect beliefs underlying the power myth of digital technology in education can be deconstructed by expanding critical pedagogy and education.

Fischer (2006) warned about the risk of adopting a sort of cyberprimitivism, which might replace a social utopia with a technological one. More recently, Zuboff (2019) discussed the social problems associated with surveillance capitalism's use of technology.

Therefore, the aim is not to act against technological development, but to evince that digital technology should serve the social sphere, including education. In order to achieve that, we need to abandon myths, leave behind our simplistic concept of technology merely as an instrument with prodigious qualities.

Hence, from the wide range of perspectives through which the study of EdTech myths can be approached, this paper will try to understand them as narratives conveying an incorrect (yet popular) tale about the potential of digital technology in education. Within that framework, the goal is to characterise the underlying debate and education development aspects. To this end, five EdTech myths are first identified, covering critical lines of debate and pedagogical research in the digital education agenda.

After this introduction, the text is organised into three other sections: methodology; results, including myth development, and, finally, discussion and conclusions.

Materials and methods

This study subscribes to qualitative research and includes two stages of development (Figure 1). Firstly, based on the Co-Design method (Gros 2019), the EdTech myths analysed were identified. Secondly, based on the "hermeneutic circle" (Gadamer 1960/2013), the criteria adopted for the characterisation and analysis of each selected myth were selected. The entire process was carried out through online meetings between the researchers engaged in the co-design .

The first stage consisted of implementing the participatory co-design proposal of Gros (2019): based on the authors' expertise as educators, university professors and researchers in the field of educational technology (between 15 and 25 years) were asked to spot significant discourses on edtech myths in education. From this diverse experiential and interdisciplinary framework (pedagogy, sociology and psychology), the process, in general, followed three sub-stages: (a) discovery, (b) ideation and (c) prototyping (Gros 2019). Considering these iterative and dynamic sub-stages (opposed to sequential and mechanical), the process is briefly described here.

(a) In the discovery stage, the authors, by adopting the interpretive-reflective approach (González 2000), considered the relationship between education and technology, and thereby identified the most popular and biased narratives with respect to their own sources of knowledge and experience. In this stage, we identified eight common topics across literature, congresses and teachers' training policies.

(b) The ideation phase encompassed a literature review of texts with pedagogical, scientific and policy-making basis in order to identify erroneous recurring aspects in EdTech narratives. Based on García-Peñalvo's (2022) characterisation of these reviews, we carried out a narrative overview collecting articles bringing evidence against each myth's main message. In this phase, we collected from three to five articles and classified them according to the narratives identified as myths.

(c) In the prototyping phase, according to the literature collected (more than five articles that deal with a myth entailing the fallacy of "digital natives"), we considered five relevant edtech myths below described:

- Digital efficiency - edTech myth 1. "The Silver Bullet" - digital technology will solve education problems
- Education for the digital society - edtech myth 2. "Digital nativity" - digital competence is an extension of use
- Research methodology - edtech myth 3. "The neutrality of evidence" - sufficient scientific support is found in the use of digital technology
- Digital educational scenarios - edtech myth 4. "Pedagogical materialism" - internet is educational material added to the classroom
- Digital educational project - edtech myth 5. "Without technology there is no paradise": digital technology ensures a better socio-educational future

In the second stage of the study, we focused on the "hermeneutic circle" (Gadamer 1960/2013) in order to carry out our analysis on the myths selected in the previous stage. The hermeneutic circle is "a movement" in "repeated return from the whole to the parts and vice versa" (p.196), between the reader and the text, within the conversation. Thus, dialogue with the world and with others is equally implied (Gadamer 1960/2013). Therefore, the concept of dialogue in which the authors have been actively

and intensively involved for more than a year has been central to the analysis of each of the five myths, in their relation as part to the whole of EdTech practice. In specific , we built on Gadamer's conception of “understanding” (1960/2013), the interpreter to let himself be guided by the things themselves is obviously not a matter of a single, conscientious decision, but is the first, last and constant task to working out the personal “fore-projection” of meaning over a text (the personal researchers’ understanding of a myth)” (Gadamer, 1960/2013, p.267). The monthly discussions between researchers led to what Gadamer characterises as a constant revision “in terms of what emerges as penetrate(d) into the meaning” to achieve “understanding” of the myth (ibidem). Each of the researchers wrote paragraphs about two myths; the following step was to discuss the myth’s central elements, and to make specific references supporting its deconstruction. Therefore, each text was commented with a view to seeking the other “fore-projection” within the myth. Three more meetings were then set to further discuss and polish each myth until the final text was obtained.

This dialogical and iterative process led the authors to the presentation of each EdTech myth structured as follows: (1) introduction of the myth as the starting point of a hermeneutical circle; (2) deconstruction work based on empirical evidence; (3) problematization and search for elements to broaden the interpretation; and (4) conclusions that reflect on the falsehood of myth and its understanding in the relative frames of reference.

1. Co-Design: Identification of the EdTech Myths

2. Hermeneutic circles: Characterisation and analysis of the selected myths

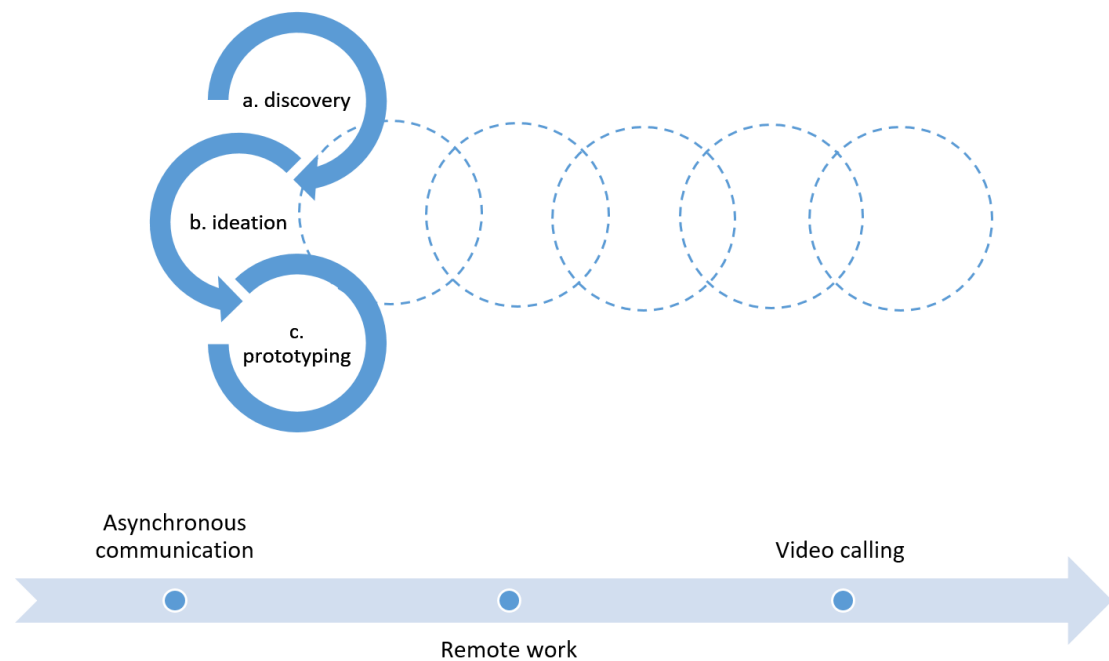


Figure 1. Stages of the methodological process.

Results

EdTech myth 1. "The Silver Bullet": digital technology will solve education problems

From the moment the Internet and digital devices became widespread in the 1990s, digital technology has emerged as a powerful variable to solve the most critical problems of education, including access to information, poor school performance, or distance management (Williamson, Eynon, and Potter, 2020). Such is the importance of the digital dimension that no education system today fails to take it into account. But what do these tools mean for the educational system? Is this the big solution to all our education problems? Is it perhaps the solution that will allow education to solve its most outstanding problems efficiently and at low cost? That is the myth: assuming a cause-effect perspective towards the impact of digital technology, when in fact education must be

understood, explained, and developed through the combination of a wide spectrum of variables. This bias, created by an over-expectation on the use of digital technology in education, is commonly found in the press, in educational outreach projects, in the blogosphere, and in social media, to name but a few examples. However, finding a solution to problems is one thing, and looking for ways to avoid coping with them is another.

This does not refute the idea that digital technology is leading to major changes in the way we understand why we learn, as well as what, how, with what, with whom, or when to learn. There are a number of changes in digital-technology-mediated learning inside and outside the classroom that the school culture needs to understand (Suárez-Guerrero, Lloret-Catalá, and Mengual-Andrés 2016). But the problem, stemming from the causal understanding of digital technology in education, is to assume that technology *per se* is able to produce significant change. Most certainly, the technological lever is connected to other educational variables (Rivera-Vargas and Cobo 2020), and unless considered in relation with other factors, technology is pointless. Therefore, the idea that digital technology is enough to revolutionise education can be examined at different levels.

At classroom level. Classrooms are the space where our idea of what a human being needs to be is developed through the use of a curriculum adapted by teachers, and dependent on the social, cultural, and economic context of the education subjects ((Erstad, Miño, and Rivera-Vargas 2021). Learning at school means following a script, a plan, and this action can never be dissociated from the environment (Biesta 2015). Digital technology is gradually becoming naturalised in many classrooms around the world, although in many places it is clearly not yet part of everyday life, because there are other priorities (social, cultural, and economic) than learning with digital technology (Lipman

2011). But the common thread is that the classroom environment, understood as an educational microcosm, tends to have the same central axis, the same priority, regardless of the media or resources it uses: the teaching and learning process (Knox 2019).

At the educational system level. Digital technology has become a great opportunity for social policies to promote collective socialisation, the integration of citizens into the social project, and social mobility (McKinney 2014). However, its implementation presents two significant problems of different origin, but with similar direction. On the one hand, education policies tend to leave the responsibility for promoting the future generations' social integration and inclusion in the hands of schools (Sancho-Gil, Rivera-Vargas, and Miño-Puigcercós 2020). On the other hand, it is increasingly evident that the social, cultural, and economic problems of the population have such deep roots that they cannot and should not be addressed solely from the education system, least of all from school-based action (Bonal, Zancajo, and Scandurra 2019).

As both aspects demonstrate, digital technology is not a one-size-fits-all variable, it is not magic. It is an essential tool for the promotion, extension, and sustainability of the education system in a knowledge society (Buckingham 2020). Therefore, the idea that digital technology is sufficient *a priori* to transform education is relative. No matter how sophisticated the technology, it can provide no answer in isolation. Educational processes are not neutral, odourless and colourless; they are political, social, economic, and cultural, in other words, they are multidimensional and thus complex. Expecting major change in the education system based solely on the technological variable is tantamount to thinking that social movements such as 15M in Spain, or the continuation of education during the Covid-19 pandemic – to provide two examples – can be explained looking only at the Internet and the availability of digital devices. Undoubtedly, both phenomena would not

have been the same in the absence of digital technologies, but there are other motivations, factors, and processes that can help explain these processes.

Edtech myth 2. “Digital nativity”: digital competence is an extension of use

The digital condition is not only an ID issue, but rather a matter of competences, a display of knowledge, skills and values about what it is, what it is for and how to use digital technology. Taking for granted that these competencies are possessed just because of being born in the digital society is disproportionate and fallacious. For years, this debate was centred around a proposal for an age division to explain the unequal assimilation of digital skills in the population. The main notions used were: analog native, digital migrants and digital natives (Creighton 2018). This last notion has been the one that has enjoyed the greatest popularity. Since its introduction by John P. Barlow in the 1996 "Declaration of Cyberspace Independence", and the popularization of the concept by Prensky (2001), the notion of “digital native” has flooded the press, social networks, debates, books and has become part of the technological imaginary, as well as an easy-to-use catchphrase to describe young people. What did the term digital native add to the educational landscape? In short, the student body that attends educational institutions in the connected world today has unprecedented characteristics associated with digital technology.

Many opinion leaders, families, politicians, digital evangelists, technology marketing managers and even some well-intentioned teachers saw that this digital generation could make a difference and that, suddenly, we were facing a new civilization that had digital technology as a flag. And this is where the myth arises: digital natives - and not digital immigrants - are part of a generation that uses and understands current

technology without major problems. Educating digital natives in technology, therefore, was an effort in vain and meaningless. The problem was with digital immigrants, the unborn surrounded by this technology, those who did not quite understand the turn that students had experienced.

Well, after these years, educational research focused on this issue. Various studies (Helsper and Eynon 2009; Kirschner and Bruyckere 2017; Creighton 2018) addressed the idea-concept about digital natives. For instance, Helsper and Eynon (2009) demystified this model of digital stratification by stating that other dimensions, such as internet access, availability of devices or schooling, conditioned the assimilation of digital skills more than age. Similarly, Kirschner and Bruyckere (2017) revealed in their study that the supposed multitasking and innate potential of the digital native student body in virtual contexts does not exist. First, because it is about a generation that has not known a world that is not digital. Second, because these skills are more closely tied to the cultural capital belonging to the families of the student body under analysis. For his part, Creighton (2018) concludes that today, students have even fewer digital skills than teachers.

The three mentioned efforts also emphasise the dire consequences that this supposed irreversible digital generation gap has had on the design of social and educational policies. Highly current topics such as knowing how to identify fake news, cyberbullying, managing digital privacy, or learning to manage time on social networks, to give a few examples, are central to digital socialisation today and will be so in the future. However, simple exposure to technology does not generate skill.

Fortunately, in recent years lines of work have been emerging and seek to design, evaluate and promote digital competence in education from a critical and comprehensive position (Vuorikari et al. 2016). Part of these results are gradually being considered in the development of educational policies with technology on digital competence (Pedró 2012;

Buckingham 2020) or in the design of learning activities (Knobel and Lankshear, 2014; Cobo and Rivera-Vargas 2018). The underlying hypothesis in all these initiatives is that the student body, apart from being born in the digital age, does not have this competence baggage automatically since it is necessary to develop it. If this idea is not understood, it leads us all to dismiss the educational viewpoint of this crucial dimension present in every citizen.

Edtech myth 3. “The neutrality of evidence”: sufficient scientific support is found in the use of digital technology

It is common to read newspaper headlines such as “the technologies that will transform education” or “the ten innovative technologies in education”. This enthusiasm reveals a causal relationship between technological development and educational action, influencing in many cases the *ethos* of educators (Belland 2009), that is, a “must be and do”. However, from the authors’ viewpoint, the question would be: where do these discrepancies come from and how are they generated? Much has been debated about the need for evidence-based education, which has produced a research trend in support of policy making (Slavin 2002). Nonetheless, as has been argued by Biesta (2015), this type of discourse would only deepen inequality gaps and problems linked to the decontextualisation of the nexus between innovation, research and educational policies. A critical look could lead to considering the influence of private economic interests and, therefore, the biases undermining educational research from a methodological approach that embraces epistemologies of complexity, postcolonial cultural balance and gender equality (Sancho-Gil, Rivera-Vargas, and Miño-Puigcercós 2020). In order to discover – to a limited and partial extent – the aforementioned issues that support the myth about the neutrality of evidence, one can take into account, on the one hand, the influence of a

certain type of grey literature (reports) considered "international", and, on the other hand, the problems associated with the research methodology in specific areas of development in educational technologies.

For instance, news dissemination has been frequently influenced by Horizon reports published since 2004 by the NMC and now by EDUCAUSE¹. These reports are marked by large industrial interests that serve institutions within a specific model (USA) with a strong presence of casuistry from the United States, Australia and other Western countries, which however can hardly be generalised to other regions. Notwithstanding this, the Horizon Reports have influenced educational policy and research. In this regard, it is interesting to observe the citation indexes' captures in Google Scholar: 2091 citations (2010); 1230 citations (2014); 877 citations (2017); 162 citations (2015); 142 citations (2018); 121 citations (2019)². As indicated by Grussendorf (2018), based on a sample of 40 papers, the citations for the 2014-17 period reveal an instrumental use of that documentation, considering it a reference to support assumptions or justifications to identify a problem or research area.

From a critical review of the research methodologies, including three systematic literature reviews where the research methodology or the epistemological definition of research on MOOC, Flipped Classroom and Data Literacy were analysed (Raffaghelli, Cucchiara and Persico 2015; Raffaghelli 2017; Raffaghelli and Stewart 2020), it is concluded that the evidence in relation to the efficacy of educational technologies is reduced by aspects of weakness in the choice of the analysis method, participants, and incomplete or conceptually limited definitions of the analysed phenomenon. In particular,

¹ Educause is a nonprofit organisation that leads a network of 1800 higher education institutions (HEIs) including 450 members from the US industrial field. <https://www.educause.edu/about>

² Own analysis based on annual visits of the Google scholar database https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Horizon+Report&btnG= (visit made on December 11th, 2020)

the following were observed: from superficial collection methods, based on very short periods of time or on samples tightly limited to a single case study, to instances of interpretation or conceptualisation by the same authors on the advancement of a field using reports and media press.

More specifically, this kind of issue is observed for the initial phases of MOOC research between 2012 and 2014. In this stage, the disruptive power that MOOCs could have in education was particularly supported due to the specific design these courses had based on a massive reach. It was only in the phases after 2015 that the biases on gender, social class and educational level of successful participants in MOOCs were identified (Bozkurt, Ozdamar Keskin, and De Waard 2016; Veletsianos and Shepherdson 2015).

As for the flipped classroom, the scientific literature in this regard has made it clear that it can be effective only in the case of working with students who have good self-regulation and access to technological infrastructure during the ‘flippable’ moments. Therefore, the flipped classroom does not apply to young children and in contexts where students have difficulty accessing digital technology, along with strong criticism in the case of teachers who do not have advanced skills in working with videos and digital environments (Chung and Khe 2017).

Regarding data literacy, a frontier of digital competence included in the European Framework (Carretero, Vuorikari, and Punie 2017), the evidence has shown that most of the studies carried out between 2015-2019 would have used a conceptualisation of data competencies linked to technical and computational capacity, regardless of ethical and critical aspects. In this sense, the frequent narratives on success and objectivism, which concern systems based on metrics and algorithms, seem to prevail over the need to know how to read the assemblages of meaning from which data is constructed and used both in

dynamic visualisations and artificial intelligence as areas of flourishing technological development (Ricaurte 2019).

These two paths across the dissemination of innovation and techno-educational research have revealed how discursive constructions are under a strong practical influence based on “synecdoches” in which the partial result (the enthusiasm for technological innovation) is mechanically translated to the confirmation of the whole (the benefit of using educational technologies).

Edtech myth 4. “Pedagogical materialism”: internet is educational material added to the classroom

In formal education, in the field of the curriculum, the internet is commonly associated with the notion of “educational material”. This occurs either at the macro curricular level, from top to bottom (Rivera-Vargas and Cobo 2020) or at the micro curricular level, for example, when reviewing the teaching units that use the internet (Suárez-Guerrero, Lloret-Catalá, and Mengual- Andrés 2016). However, when dealing with non-formal and informal education, as well as the intensification of the hybrid learning option in the COVID-19 pandemic (García-Aretio 2021), another notion becomes evident: education is not simply conceived as something *with* the internet, but *on* the internet. Here is the myth, to see the use of the internet in education can be limited only to the notion of educational material. How would the view on education change if the study and educational practice focused on the environments created with the internet and not only on the artefacts that are employed?

The idea that the internet represents exclusively teaching material could be limiting for a meaningful educational appropriation of it. Internet is not only a part of the

educational furniture of the classroom, but its use in education can generate a learning environment and, with it, other - better or worse - forms of action and representation of education. Using the internet in education is creating another educational experience. This reflection is typical of the pedagogy of virtual spaces that makes the pedagogical question relevant on the internet: Where to learn and teach? Understanding what learning environments are created with the internet, not just what internet tools can be used, according to Luckin (2010), marks differences in the way of redesigning educational opportunities with technology.

To address this turn, three layers of analysis can be proposed. A first key question is to understand the value of the environment in educational representation and action. From the socio-cultural vision of learning (Vygotsky 1980), an environment is not only a setting where the subject is located. An environment is part of its real development, the area where the subject evaluates both his own limits and possibilities. Thus, an educational environment - such as a classroom, a library, a museum or a gymnasium - provides teachers and learners with scopes of representation and action, cognitive boundaries of what is possible to do and be. Speaking of an environment not only means dealing with a set, but an environment is also part of our projections because it is not possible to be outside the environment. There is no human condition apart from the surroundings. However, what are those boundaries on the internet like?

A second question is to understand what the subject is like and how it is registered and situated in an environment such as the internet. As Castells (2010) points out, “we do not 'see' the internet as we watch television. In practice, Internet users (...) live with the Internet” (104). So, what environment does the internet offer? With respect to classical environments, such as nature or the city, characterised by hosting social and cultural practices based on flows of simultaneity in time and space, according to Castells himself

(2010), the internet offers a “gradual decoupling of contiguity and simultaneity. The space of flows refers to the technological and organisational possibility of practising simultaneity without proximity” (62). This notion of digital territoriality, without simultaneity and without proximity, is the environment that characterises the Network Society.

Third, what changes when the learning experience is hosted on the internet? On the internet, it is not only possible to be a listener or a spectator, but it is also possible to perform different actions. For instance, to collaborate or work remotely with others; to participate, debate and discuss online; to explore and select information beyond the curriculum; to visit sites virtually; to design and create open materials; to edit entries in wikis or blogs; to play and learn online, among other online actions. The Internet is not the cause, but these are potential actions within the scope of action and representation in the network where there are undoubtedly also dangers, since inhabiting the network means also being exposed to it. Therefore, using the internet, as seen in myth 2, requires much more than technical skill. It requires having skills associated with an awake, critical and active look on how to process, communicate, create, resolve and be ethical.

Notions such as extended social space (Cavanagh 2013), learning ecology (Jackson, 2013), visitors and residents (White and Le Cornu 2011) or personal learning environments (PLE) (Dabbagh and Kitsantas 2012) have been contributing to making more evident the need to pay more attention to the internet as an environment. Returning to the central argument, these efforts do not only represent a technical and educational material challenge, but also the need to understand the characteristics of this environment, its limitations, dilemmas and possibilities of being and acting in a network environment.

Edtech myth 5. “Without technology there is no paradise”: digital technology ensures a better socio-educational future

International congresses, high-impact journals, influential “think tanks”, philanthropic lobbies or renowned research projects have created a “narrative” based on the idea that it is possible to build a desirable vision of the future in education thanks to the advances of digital technology. Thus invoking “technological solutionism” as a panacea for education (Jasanoff 2015). Considering what Cummings et al. (2017) called the techno-scientific-economic framework of the Information and Knowledge Society, this myth puts in tension the promise that the massive insertion of digital technologies in education – product of a strong investment and the consequent reduction in production and distribution costs – may, for this reason alone, represent an unavoidable opportunity to: reduce acquisition gaps for devices, access knowledge in a more open and democratic way, and improve learning.

At the beginning of this century, top-down educational initiatives and policies began to proliferate in different parts of the world with an aim of promoting the provision of digital technological resources in schools. Based on the premise that the introduction of “devices” in classrooms would simply “revolutionize the educational system”, most of these policies were implemented due to the emergence of the “One Laptop Per Child” (OLPC) projects (Balanskat et al. 2013).

These initiatives have been globally promoted through the spread of digital technologies in schools. The promise in this sense was to facilitate and expand access (particularly to those disadvantaged) to a variety of economic, social and cultural spaces through the use of digital technologies (Warschauer and Ames, 2010). The initiative was criticised from the beginning (Zheng et al. 2016) and of course, not all these top-down

initiatives had the same result even though their hasty closings and their lack of sustainability were the most common (Cobo and Rivera-Vargas 2018). Regardless of this, different voices (Cristia et al. 2017) recognise that, along with these initiatives, two important transformations took place:

In connection with the first transformation, the development of OLPC initiatives complemented the already active promotion of other digital devices and tools. The introduction of personal computers then paved the way to digital whiteboards, tablets and mobiles. Along with this, training and education proposals moved from device use manuals to more complex processes (although not extended) of literacy in digital competence (Burch and Miglani 2018). In general, all sets of tools, means and actions promised a substantive educational revolution that distanced itself from the analogical heritage in education, which, however, does not seem to have happened either (Rivera-Vargas and Cobo 2020). There is also no evidence of unequivocal and direct improvements in learning (Selwyn 2016; Eynon and Geniets 2016) apart from the substantive efforts made by certain sectors to demonstrate it.

In relation to the second transformation, the hybrid public-private alliance has ended up strengthening EdTech capitalism. Although the presence of the public sector has been relevant (especially in terms of financing), the role of the private sector has been fundamental for the management and reproduction of this model (Díez-Gutiérrez 2020). It is a new digital governance that is being imposed on us (Zuboff 2019), where the public-private hybridisation is becoming the subordination and dependence of the public towards the private. Through renewed and cyclical promises of transformation and digital revolution (Rivera-Vargas and Cobo 2020), the great sponsors of EdTech have promoted in this way its definitive arrival in education, proclaiming the urge for public-private collaboration to manage tomorrow's education.

At present, the techno-optimistic discourse has focused on the potential of the data produced by the educational community when browsing the internet through hardware and software (Williamson 2020). Based on this, and faced with the lack of knowledge, as well as the absence of a critical citizenry in the use of data (Raffaghelli and Stewart 2019), we seek to insinuate the idea that Big Data, Artificial Intelligence, digital platforms and the cloud will lead to the modernisation of an education anchored in the last century, reissuing this "life-saving technologies narrative" started at the beginning of the 20th century (Williamson 2020). It is, then, a new version of the same redemptive promise of digital technology and hegemonic discourse that, as Selwyn (2016) highlights, leads us to believe that there is no other valid option for educational development that does not include an active use of digital technologies.

Finally, and returning to the basis of this myth, a fundamental problem is that, in order to maintain optimism and compulsive confidence in the potential of digital technologies (Vydra and Klievink 2019), the Big Tech industry pressure to increase profits based on EdTech capitalism has ignored and omitted the most basic aspect about new technologies and pedagogy: that the introduction of devices by itself does not allow to learn more, better and at a lower cost, but it does allow to learn in a different way (Knox, 2019). Therefore, rather than providing educational answers, what opens up is a set of questions to be addressed in the present and in the future (Suárez-Guerrero, Rivera-Vargas and Rebour 2020).

Discussion and conclusions

Digital myths are present in educational representations and action, namely, the EdTech myths. Digital devices are not just artefacts, they mediate our relationship with the world on which meaning, and sense are built, and that, according to Floridi (2015), increasingly

affect: “1. Our self-conception (who we are); 2. Our mutual interactions (how we socialise); 3. Our conception of reality (our metaphysics); and 4. Our interactions with reality (our action)” (p. 2). Both in education and in other areas of social development, it is important to unveil the quality of the narrative on which the image of digital technology is built today.

In this study, there is evidence supporting that digital technology is an inevitable part of education. Nonetheless, there are a series of EdTech myths that feed biased educational views, whose deconstruction is necessary. Only five are shown here, and we will label them to further elaborate on the educational impact of the myths considered.

The first EdTech myth could be titled "*causes and effect*". Digital technology is not the magic variable. It is an essential tool for the promotion, extension and sustainability of the educational system in the knowledge society (Buckingham 2020), but the idea that digital technology is a priori enough to make the great educational breakthrough cannot be sustained. Educational processes are multidimensional and, therefore, substantively complex.

The second EdTech myth can be named as "*having is not being*." There is a discourse, supported by ideas such as digital nativity, which assumes that being born surrounded by technology provides the basic capacity to take advantage of its potential. This idea biases educational practice since there is evidence showing that the simple use or proximity to technology do not ensure that students develop basic digital skills aimed at not only an effective use, but also a use that is safe, ethical, productive, socially committed, creative or strategic in students' lives.

We could refer to the third EdTech myth as "*b and appearing*." It is essential to review the formulation of research problems on educational technologies because, as pointed out, they serve a research agenda connected to commercial or institutional

interests that, likewise, do not have solid and transparent methodological approaches. Apart from the idea of transferability of research results to educational technologies, the transparency that allows a genuine appropriation and contextualisation of results could be contrasted.

Addressing the fourth EdTech myth, we labelled it as "*dwell and using*." To use it is to inhabit the network. The Internet entails an environment of action and representation, and to use the network in education means also to inhabit it. The educational narrative on digital technology focuses on conceiving the internet as an artefact, but this idea limits a broader analysis that, beyond proving its effectiveness or not in learning, could bet on detecting other educational problems such as legitimization, appropriation, culture, innovation, and identity in such an environment. Considering the Internet as an environment can add other elements of analysis with possible challenges for research and educational policy.

Finally, we entitled the fifth EdTech myth "*vision and need*". In this case, the core problem lies in the fact that society's optimism and compulsive confidence in the potential of digital technologies (Vydra and Klievink, 2019) are due essentially to the inefficiency of public administration and the lack of technical capacity to address the challenges of the education system in the digital society as a whole. This has caused the BigTech industry to be the one that, based on their agenda, ultimately defines public administration, and identify both the priorities and the problems, as well as the solutions, in the education of the present and future.

To explore and understand the meaning of these and other digital myths as an object of educational analysis means to delve into the symbolic world through which teaching and learning practices combined with technology are conceived, designed, and valued. Beliefs on education through technology and its motivations, aims, users, etc.,

are not separate from the facts (Gros and Suárez-Guerrero, 2016). There is evidence that beliefs, which are constructed from direct observation, as well as deduction from another belief or an external informational source, are fundamental for the use and appropriation of technology in education (Albion, & Ertmer, 2002; Cheng, Chen, & Chang, 2020). It is within this framework that the importance of the study and clarification of digital myths in the construction of education becomes evident, adding to the line of research that explores the value of beliefs in educational practice (Fives, & Gregoire, 2015).

Therefore, just as building an educational project based on values, models and dynamics associated with Wikipedia or Google (Ricaurte, 2016; Saura, Díez Gutiérrez, & Rivera Vargas, 2021) is detrimental to education, so it is thinking that digital technology is a great solution to educational ills, that it is enough to be born in the digital context to be digital, that there is no agenda and commercial interest in digital research, that using technology is only adding artefacts to the classroom or that it is substantial to compulsively use technology to educate. Jones and Carter (2007) argue that this web of ideas, whether correct or not, is used by teachers to educate "teachers' personal epistemologies" (not alien to educational development with technology) in the same way as digital metaphors in education (Stevenson, 2008) are employed in the identification of problems and solutions at all levels of educational decision-making (Pangrazio & Sefton-Green, 2021). Edtech myths are part of that group of beliefs that teachers need to examine as much as or more than the technical potential they seem to offer. Therefore, the novelty of this work does not lie on the classic educational concept of technology, seeking to verify which tool to add to education, but rather to examine how to approach it through the mentioned beliefs.

After reviewing the five myths, the following idea can be debated: the matrix where EdTech myths are built revolves around a deterministic vision of technology. Over

expectation, digital nativity, neutrality of the technological discourse, the internet emphasized as a material and the idea of a technological future are all visions anchored in a reality made of mechanical postures. Since technological mythification is fundamentally fed by the techno-deterministic narrative (Mosco 2005), there is the urgency to see digital technology in education as part of a human project where many other variables, more complex processes, and new utopias are combined. In the words of Goetz (2020), the idea of education is something of greater importance than uncritically downloading the latest application based on a popular idea of its virtues.

This paper sought to demonstrate how myths can impoverish education mediated by technologies as they represent it from a reductionist perspective amplified by different interests. Hence the need to pay greater attention to EdTech myths as an object of study in the construction of practice and research within educational technologies. Therefore, rather than going from myth to logos in the classical sense, we should be moving from mere acceptance to an act of criticism as a formula for a fair and on a human-scale appropriation of educational technology. A working mechanism that can be activated beyond this techno-pedagogical criticism is to start by questioning the obvious (Suárez-Guerrero, Rivera-Vargas and Rebour 2020). In order to introduce further development, the following problem is addressed: how would the gaze on technology change if its study, instead of seeking full approval, demystifies the discourse?

Although only five EdTech myths have been explored, this study does not end here. More EdTech myths could be detected with other means and research methods in other educational contexts. An intrinsic limitation in this paper is the selective approach that the authors adopt with respect to the evidence collected. Therefore, in subsequent studies, it would be desirable that the mentioned demystifying approach could be applied to discursive forms located in educational networks, institutions, associations or

communities in a participatory way. A space is thus left open not only to recognise other EdTech myths, but, based on them, to shape an educational agenda endowed with categories of action and critical processing within the relationship between education and technology.

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