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PEDAGOGY IN THE FACE OF THE DIGITAL CHALLENGE: NEW MATERIALITIES

La pedagogía ante el desafío digital: nuevas materialidades

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ABSTRACT

The materiality of things has up to now been understood in two ways that derive from their tangibility. On the one hand, as mere means at our service, and on the other, as objects with the capacity to affect us and even educate us. The *onlife* reality we now inhabit obliges us to think about this materiality in a way that is not subordinated to its tangible nature. This new way of seeing, thinking and understanding the world requires pedagogy, from its own principles, to understand the grammars that comprise it to be able to define the most appropriate educational approaches. This is the main aim of this work. To do so, we will use a methodology of interpretative and critical documentary analysis, from a normative-pedagogical perspective. First, we focus on artificial intelligence objects, which are likely to become the foremost educational

tools in the near future. We then address educational spaces, paying special attention to the classrooms of the future and their status as places or non-places. Thirdly, we consider bodies in the educational setting through the role of *edu-influencers*. We conclude that we confront a new materiality, one that is intangible but also material, which drives us to educate (ourselves) in and for a context that is ever less open to innovation and plurality and so is less human. Rehumanising the *onlife* world must necessarily involve an education that fosters the construction of each individual's own uniqueness, and at the same time is open to welcoming others.

Keywords: knowledge society; educational theory; digital technology; ICT; artificial intelligence.

RESUMEN

Hasta ahora, la materialidad de las cosas ha sido entendida de dos maneras que venían dadas por su tangibilidad. Por un lado, como meros medios, a nuestro servicio, y, por otro, como objetos con capacidad de influir en nosotros, llegando incluso a educarnos. La realidad *onlife* en la que vivimos actualmente nos está obligando a pensar en esta materialidad de una forma no supeditada a su carácter tangible. Esta forma renovada de ver, pensar y entender el mundo reclama de la pedagogía que, desde sus propios principios, conozca las gramáticas que la constituyen con el fin de poder definir las orientaciones educativas más adecuadas. Ese es el objetivo principal de este trabajo. Para ello, utilizaremos una metodología interpretativa y crítica de análisis documental, desde una perspectiva normativo-pedagógica. En primer lugar, nos centramos en los objetos de Inteligencia Artificial, susceptibles de convertirse en un futuro próximo en las principales herramientas a través de las cuales educar. En segundo lugar, nos ocupamos de los espacios educativos, con especial atención a las aulas del futuro y a su carácter o no de lugares. En tercer lugar, atendemos a los cuerpos en el contexto educativo a través del papel de los *edu-influencers*. Concluimos nuestro trabajo señalando que nos encontramos ante una nueva materialidad, intangible, pero de igual modo material, que está empujándonos a educar(nos) en y para un contexto cada vez menos abierto a la novedad y a la pluralidad, y, por lo tanto, menos humano. Rehumanizar el mundo *onlife* deberá pasar forzosamente por una educación que potencie la construcción de una singularidad propia en cada individuo, al mismo tiempo abierta a acoger la de los demás.

Palabras clave: sociedad del conocimiento; teoría de la educación; digitalización; TIC; inteligencia artificial.

1. INTRODUCTION

In the short story *Coisas*, the Portuguese writer José Saramago describes a world where material objects start to disappear, seemingly having a life of their own. More and more of them disappear until none are left, taking with them in the process those people who hold onto them. Finally, there are only a few remaining

naked survivors who had hidden in woodland on the outskirts of the city. The story ends with one of the survivors saying that from that moment they would have to rebuild everything, to which another survivor adds: "we had no other choice; the things were us. People will not be put in the place of things again" (Saramago, 2015, p. 107). This text presents things as a danger, a threat to humankind, seeking to underline the importance of not clinging onto them and, when the time comes, of letting them go, as well as highlighting a logic centred on possession of material things that prevents us from going further.

However, this is not the only way to consider the material. The Spanish poet and writer Luis García Montero published another more personal story some years ago, in which he asserts the importance of holding onto things as a form of resistance in the face of a world that tends towards constant change and non-permanence. Accordingly, he recaps certain objects that have marked his life, after arguing that things are "objects with which we coexist, they know us and they enable us to know ourselves, they form an intimate curriculum, a human vision of the background. Joy and sorrow are within things" (García Montero, 2012, p. 10). This author, here argues that things form us and shape us, and so it is appropriate to keep a record of them and analyse them, as this will not only help us to know who we are, but also to determine why we are the way we are.

These two works of fiction show us that the popular imaginary contains two very different ways of conceiving of things. One of them, more superficial in nature, sees things merely as means that serve to satisfy needs and desires, and, depending on the relationship between supply and demand, would acquire a particular price. In other words, this could be classed as a way that understands the object as merchandise. The other, of a more profound nature, while not denying that things are means, also recognises their capacity to include an aim, influencing people to a greater or lesser extent depending on the level of intimacy in the relationship with each of them. Considering this second way of understanding them, which focusses more on use value than exchange value, in Marxist terms, Alba Rico affirmed several years ago that in our world "things have disappeared. [...] The capitalist market creates a 'new man' because it establishes an unprecedented anthropological place where everything that exists – all creatures, natural and artefacts – can be replaced" (Alba Rico, 2010, p. 61). What makes each of us a singular being is particular uniqueness that makes us irreplaceable. This also applies to things when we understand them as unique material realities that form and shape us. They demand care and dedication because, like everything finite, they are fragile, vulnerable, breakable, and once they become irreparable, nothing and no one can take their place. This author then observes that, thanks to capitalism, the first conception of things that we set out above – objects as mere means, merchandise without inherent value or purpose – has become the only one possible in our world, and it makes invisible the second one, in which, as things are irreplaceable, they become more human and humanising in character, reducing at the same time the dominant and apparently

omnipotent role of human beings who, faced with the universe of the material, could seemingly do everything.

A return to this way of understanding things is essential in a context such as the one we have lived in since roughly the last third of the 20th century, which has brought with it unprecedented technological advances that have increasingly complicated the clear distinction between people and things. In the late 1990s, Donna Haraway discussed this, arguing that as the 20th century approached its end, "we are all chimeras, theorized and fabricated hybrids of machine and organism—in short, cyborgs. The cyborg is our ontology; it gives us our politics" (Haraway, 2020, pp. 19-20). Even then, she proposed a welcoming, caring and, above all, horizontal rather than vertical way of approaching the material, as "the machine is not an *it* to be animated, worshipped, and dominated. The machine is us" (p. 119), and the future of the human species will depend on how we treat each other. Some years later, with the great development of the digital world, some authors argue that we have gone from being machines to become information, data that flow incessantly and unstoppably through hyperspace, *inforgs* who inhabit a reality where what is online can no longer be distinguished from what is not, an *onlife* (Floridi, 2014; 2015) reality that obliges us to think of ourselves in a completely new way.

This poses a major challenge for all areas of human life, as well as for the field of education and, above all, pedagogy, as this is a science based not only on study of education as a phenomenon but also on guiding it (Touriñán, 2019). Among other reasons, because if we are essentially information, this would, in principle, involve a dematerialisation or rather, as we argue here, the creation of a new materiality that can no longer be defined by tangibility (Sánchez-Rojo *et al*., 2022a) and that demands that pedagogy, from its very principles, understands the grammars that comprise it to be able to define the most appropriate educational approaches (Sánchez-Rojo *et al*., 2022b). This article intends to concern itself with the disentangling of these grammars, thus identifying not only what they comprise, but principally what challenges they present for education. This article uses an interpretative and critical documentary analysis methodology from a normative-pedagogical perspective; that is to say, it focusses on considering in depth the aims of education as conditions of possibility for the actions that are by nature most humanising. To make the analysis exhaustive, organised and, above all, comparable with the context prior to the *onlife* world that we now inhabit, we will use as a guide, a work that focusses on analysing the traditional modes of educational materiality which establishes that "any materiality present in educational processes could, in principle, be distributed into one of these three categories: objects, spaces and bodies" Trilla, *et al*., 2022, p. 47). In this way we will first consider artificial intelligence (AI) objects, insofar as they relate to our *onlife* context and are soon likely to become the principal tools through which we educate. Secondly, we will address emerging educational spaces and their character as places or non-places, focussing on the classrooms of the future. Finally, we will consider how the body is reflected in educational contexts, fundamentally through

analysis of the role of what are known as *edu-influencers*. At all times we will take account of the two ways of understanding things that coexist in our imaginary that are described above and we will try to make explicit whether this type of things situates us closer to commodification or uniqueness. We conclude with a series of pedagogical recommendations based on these three analyses.

2. Pedagogical implications of the material nature of artificial intelligence objects

For decades, albeit with very recent repercussion, a special type of technological object, AI, has entered all areas of life, including education. This type of object takes another step in the transition to the materiality that is typical of the *onlife* world, which would not be defined by tangibility, as it does not have it, but by its capacity to affect our reality and how we behave. Some authors speak of this historical moment as a turning point in history, where "things" accelerate more than ever, moving from linear progress to an exponential one (MacAskill, 2022), and where there are more signs of a break than of continuity with earlier technologies and we can speak more of revolution than of evolution (Roll & Wylie, 2016). The arrival of the so-called internet of things (Alvear-Puertas, *et al.*, 2017) – that is to say, robots, control systems, drones and autonomous vehicles that perceive, emulate, make decisions and interact with the world, as well as the democratisation of autonomous learning models or *chatbots* that can hold conversations with the tangible world – has resulted in something more than a quantitative leap in the acceleration or automation of tasks and actions that we already did: it has led to a qualitative change in the way we are and the way we act in the world since, on a daily basis, we coexist with objects that we have created which surpass us in many areas. More than two decades ago, Hoc (2000) argued that the mistaken idea that humans dominate machines in a controlled relationship had survived since the 1960s, and that forty years on it was unclear who controlled whom. He proposed a move from interaction to cooperation between the two to guarantee healthy coexistence. In the last twenty years, we have gone from asking ourselves who controls whom to asking ourselves who is who on the porous frontier of the *infosphere*.

AI objects (voice recognition systems, recurrent neural networks, recommendation systems, interactive holograms, virtual assistants, *chatbots*, robots, autonomous control systems, sensors, data collection devices, natural language processing algorithms and automatic learning models) write, speak, paint, drive, interact, console, translate, analyse, recognise faces, compose music, teach maths, win at chess and even provide therapy for patients. In view of this, we ask here how the materiality of AI changes us educationally as humans, what type of relationship we create with these objects, with ourselves and with the world, and whether these objects push us towards treating things for their exchange value or for their use value. In response, we develop three ways of thinking in this *onlife* world, based on AI objects,

marked by three transformations that involve a shift: 1) from cognitive capitalism to computing capitalism; 2) from possession of things to eternal access even to people and 3) from *hardware* alterity to *software* self-referentiality. Respectively, these transformations, as we will argue, tend to generate a datafied subject, digital heir and forever young, affected by AI digital objects in a way that would open a third way of conceiving things, not only for their exchange value or their use value, but also for their apparent liberating character.

In cognitive capitalism, a term coined by Moulier-Boutang (2008), knowledge is the starting point for new capital relations, while in computing capitalism (Bryan & Rafferty, 2006), data is the starting point. The prominence of information in opposition to knowledge has obvious pedagogical consequences relating to the type of empowerment that it generates in people (Luri, 2020), but it also has some initial anthropological implications that are worth analysing. If in the industrial revolution, we were concerned with the fragmentation and separation of the human being from nature, in computing capitalism there is a fragmentation in the very relationship with things, as these AI objects are abstract and insignificant fragments. Regarding the datafication that computing capitalism causes, Deseriis (as cited in López Gabrielidis, 2020) affirms that this "addresses the subject as a signifying entity (…) to then extract value from the recombination of its dividual transactions in a potentially infinite variety of data sets" (p. 124). Two clear examples of AI objects that create datafication of subjects are the smart watches we wear on our wrists and the *chatbots* we interact with from any device at any time. The former tell us our heart rate, count our steps and can even detect the early signs of Parkinson's. They datafy everything, monitoring reality. We are not really aware of how they do it or what exactly they do to us, but they use intelligent algorithms to generate calculation-based recommendations. Consequently, a walk becomes a number of steps, and a conversation with ChatGPT is datafied in titles that summarise each of our interactions as a record. Ultimately, they are objects that datafy life as "discontinuous units of brief actuality that are not combined to constitute a history" (Han, 2018, p. 6) or a narrative. The narrative continuity of life (a walk or a conversation that generate history and memory) becomes hetero-interpreted by an accumulation of data monitored by another, offering us a datafied proposal for self-interpretation of our life[1]. In this way, things can be treated with a use value or exchange value to a greater or lesser extent, but, above all, as a liberating proposal that frees us from the weight of self-interpreting our life in coherent narratives with a single meaning, a task that is often difficult but which humanises us (Taylor, 2006).

The transformation from possession of things to eternal access to people may be better understood from the perspective of holograms and augmented reality as AI

[1] We have already found cases of this type in the world of education. One example is how China uses AI to measure the capacity for attention of children in the classroom, with the implications of this: https://www.youtube.com/watch?v=JMLsHI8aV0g

objects that have brought about a way for the dead to leave behind some "life". A little under a year ago, we heard[2] of a famous American model and businesswoman who was given a hologram of her late father as a birthday present, with which she could talk and interact. Even more chilling is the case of a mother who brought her late seven-year-old daughter back to life, whom she could feel she was hugging thanks to virtual reality[3]. This access to dead people has been understood as a chance that AI offers us to free us from more banal legacies of material things, many of which can also be stored in the cloud, and leave us as legacy ourselves. Therefore, we speak of the step from possession of things to eternal access to people. We could ask what kind of possession we have when we possess a hologram, and what kind of legacy is left because, as Thoilliez (2022) recently argued, we can only leave behind what we possess. We said at the start, with regards to the work by Saramago (2015) that in a negative understanding of possession, there is a human drive that often pushes us to cling onto things. However, it is a priori easier and less costly (especially in life) to dispose of your hologram than of a property on the shores of Lake Como. AI objects offer objects that *are* people themselves and so a datafied being leaves itself, appearing to be more permanent, to be more indifferent towards objects and have greater care for the personal legacy. We do not know exactly what these new digital heirs possess with access to holograms of their significant others, but we do know that these holograms, created by companies, serve as the binding and forgotten "loved things" (Han, 2018, p. 14).

If our recent experience with information processors and *chatbots* has shown us anything, it is that they aim to make our lives easier, be at our disposal and contradict us little. These objects have been trained to avoid discriminatory biases and controversial positions at a societal level. But the fact is that the level of response adapts to the level of the question. There are no bad questions for AI. This is what we wanted to call the transformation from *hardware* alterity to *software* self-referentiality. Things from the *infosphere*, as we said above, have a material nature despite their intangibility because they demand specific actions and behaviours from us and, in this respect, they set limits for us. Having said that, the limits that they set for us are our own. In this regard, Luri explains that digital technologies, contrary to their apparent democratisation, work like anthropological prostheses that amplify what we already are, and they do not have the capacity to sublimate us. *Chatbots* in particular impose a new *friendly* alterity (Han, 2018), which in some way shares Lévinas's (2005) category of alterity as another which is unfathomable and inexhaustible and does not allow itself to be possessed, but which is also *friendly* as it does not intend to fight or enhance our desires. Thus,

[2] This news story can be found at: https://elpais.com/ideas/2022-07-08/maneras-de-vivir-despues-de-muerto.html

[3] This news story can be found at: https://www.xataka.com/realidad-virtual-aumentada/recrean-a-nina-siete-anos-fallecida-su-madre-pueda-reunirse-ella-usando-realidad-virtual

as we said, they produce a *soft* self-referentiality, as time and time again they take us to ourselves from ourselves. If we share Biesta's (2022) idea that being in the world in a grown-up way is related to the fact that things and the world are not how we wish them to be, AI objects can be directed at a subject that remains "*forever young*" in the words of the song by Alphaville, with an apparent release from the harsh impositions of the obstinate alterity which is not based on and does not consider our desires and preferences.

AI objects, which reduce all of reality to data that are stored and accessed but are ultimately homogeneous and standardised, reduced to codes and algorithms, do not belong to us. They cannot do so, because they are not unique, even though they may appear to be so. They are simulacra, reflections, but they are not authentic, and it is for this reason that it is easier to trade in them. Similarly, as they are always based on ourselves, they do not make us confront the world, they do not force us to put up resistance, but rather they condemn us to a constant circle of self-reference. This is why the legacy of the common heritage, which is pedagogically fundamental from a human perspective, is ever more inhibited, and so it becomes vital to establish the necessary ways to recover it (Bellamy, 2018). This does not mean that we must eschew AI objects, something that would seem to be impossible with the way things are currently configured. Instead, we note that it is important to face the obstacles that AI objects might present for the development of a full integral education, establishing pathways that allow individuals to come out of themselves, to know other realities and to embrace actions such as caring or sharing that were provided by the loved material things that educated in values through the ideas of finitude and belonging.

3. Pedagogical implications of the materiality of spaces in the *onlife* world

Just as we have identified how this striving to detach ourselves from the things of the physical world appears to have stripped of uniqueness the objects that form and shape us, the same process seems to have happened with the places we try to inhabit in the *onlife* world. ICT and cyberspace have created a space that is intangible, seemingly immaterial, and, consequently, exceedingly flexible. A space that appears before us without restrictions and with many options on the menu. We can choose from countless applications and platforms to communicate, educate or inform ourselves, in different formats, in any place and at any moment.

As Lefebvre (2013) showed in his work on the production of social space, spaces are a foundation, but also a field of action. This is why spaces must be regarded as the basic substrate of the structure of education (Muñoz-Rodríguez, 2005; Ford, 2017). Spaces demand things, everything we think, feel, do or imagine is anchored in a concrete space and time, including in virtuality (Muñoz-Rodríguez

& Olmos Miguelañez, 2015). Accordingly, from a pedagogical outlook, space has always raised questions about ways of doing and thinking education, and it still does, despite the changes that the digitalisation of our world might have brought with it, which has not only allowed us to relocate physical space to a different setting but has allowed us to create new spaces, or even mixed realities, in which digital and physical materialities come together. It is true that these new spaces seem to have relinquished things, at least as we understood them before now. This is why making them unique is ever more complicated. There is a high level of connection and so, bringing this fact into the field of education, it is worth asking ourselves about what pedagogy can offer us in a setting with no delineated walls, doors or windows, where we do not find concrete things, but information whose form of appearance seems to be unlimited and in an always open context. We will now try to answer this question by showing the extent to which some educational spaces of the *onlife* world could be losing their condition of place; that is to say, of spaces with a certain concrete uniqueness that makes them singular, irreplaceable and at the same time capable of constructing a relationship of deep closeness with those who occupy them, thus impacting and influencing the development of their personal identity (Tuan, 2001).

In this regard, as a counterpoint, it is relevant to recover here the concept of *non-place*, coined years ago by the French anthropologist Marc Augé. For this author, "if a place can be defined as relational, historical and concerned with identity, then a space which cannot be defined as relational, or historical, or concerned with identity will be a non-place" (Augé, 1993, p. 83). Examples of non-place would, for him, be transport systems such as airlines, railways and motorways, and all of those other mobile spaces intended for transport, such as planes and trains, as well as those transitional sites, such as hotels, amusement parks and supermarkets. These spaces are occupied but not inhabited, nobody can set down roots in them. There is essentially nothing that distinguishes a supermarket in Madrid from one in Paris or Singapore. They are spaces with which there is no possibility of intimacy, we do not leave a mark on them, and they do not leave one on us.

Nowadays, under the growing influence of the digital environment, we tend to locate what we value, what characterises and what defines us online rather than offline, and this seems to be affecting the places we inhabited up to now. The things we most value we usually upload to the cloud or share with other people directly with a click. Consequently, there is evidence of a clear trend to deprive places such as offices or rooms of the material elements of a personal nature that made them unique and made them special. So, we are gradually removing uniqueness from spaces that, at the same time, are ever more hyperconnected. We move through hyperspaces that could perfectly be perceived as non-places. We are condemning the spaces we occupy, even the most private ones, to be mere transitional sites (Sánchez-Rojo, 2019).

This growing trend of non-places seems to have spread into the field of education as well with the invention and gradual popularisation of a type of high-tech classroom, generally referred to as hyperclassrooms or classrooms of the future. These types of classrooms present themselves to the world as large, open, flexible and reconfigurable hyperspaces (Fernández Enguita, 2018), in the same way that current society is and demands that we be. In these spaces, colonised by the presence of permanently connected digital equipment and devices, the furniture is entirely movable. Unlike the traditional space, chairs and desks can now be moved and reconfigured as the moment requires. In the classroom of the future there is space for everything: lectures, teamwork, free movement, individual activity, etc. Unlike the traditional classroom, bound to a physical and temporal space, we find ourselves in a context where space no longer dictates the learning time, as the educational action is de-localised. Everything that takes place in the physical space of the classroom, continues afterwards in the virtual setting (Alonso, 2022). Consequently, there is a flexibilisation of space that brings with it a generalised acceleration of times, as this spacial flexibility makes it possible to play with times without encountering any obstacles or physical resistance. This turns space into malleable element when faced with any eventuality or necessity, the very factors that define our current socio-economic context.

The hypermedia and hyperconnected nature of classrooms of the future means that where we are in the world can cease to be important; whether we are in Madrid, Johannesburg or Beijing, the classrooms are all practically identical, without elements that enable them to stand out or acquire their own identity. They are, therefore, clearly non-places, transitional sites, without their own uniqueness. Nonetheless, this fact should not surprise us, as many of them have been designed by major technological giants[4] whose interests are based on the efficiency and profitability of the product, and not on educating people (Ford, 2017).

The classrooms of the future are conceived of by using parameters of academic performance in accordance with what society and the job market currently demand and not from the perspective of a full education. Given this scenario, from a pedagogical perspective, what should be demanded is not that classrooms should have no technology in them, but that educators should try to avoid a loss of habitability in educational spaces. Embracing and caring for these spaces, giving them their own uniqueness that makes them into places, with their own history, dynamics and temporality, where the people who occupy them can come to inhabit them in order to construct their identity in unique terms beyond any result of efficiency in performance.

[4] See, for example, the "Smart Classroom" projects of different technology companies: HP Smart Classroom https://grupo-ae.com/rtci/ or Samsung's Technology in Education project: https://www.samsung.com/us/business/solutions/industries/education/

4. Pedagogical implications of the material nature of datafied bodies

The Spanish media recently reported on an augmented reality project that had been implemented in different parts of the country with seemingly good results, which involved people putting themselves in the place of three members of the LGBTIQ+ community. Through a pair of glasses, anyone can enter into someone else's body and experience certain situations of hate and violence as though they were inhabiting the body of another and experiencing these situations in the first person. Through this, the aim was to achieve a higher degree of empathy with the community to help prevent and fight LGBTIphobia[5]. Nonetheless, in the same way that this artefact can help us put ourselves in the place of victims, so that we develop more empathy with them, it could also put us in the position of the tormentor making us feel a sense of control and superiority that might incite us to violence (Jiménez Toribio, 2019). In fact, this has been a classical criticism of access by children and adolescents to particular violent videogames, even though it has been demonstrated that the personal and social environment can lead to violence, rather than the content of videogames. And the fact is that, in both cases, the basic idea that supports the belief in this influence is that we really can escape from our body, distance ourselves from it to experience another, because we have a body, but who we are goes far beyond this, so that we can put it in suspension, configure it or manipulate it at our own whim because, if it says something about who we are, it is because we have wanted this.

As happens with objects and spaces, the vision of the modern Western world has also meant that we conceive of the human body as a simple means available to the commands of the mind, which is apparently solely responsible for pursuing particular goals. The modern body implies "the break of the subject with others (an individualist social structure), with the cosmos (the raw materials that comprise the body have no connection with the outside), with the self (having a body instead of being a body)" (Le Breton, 2021, p. 17) and this makes it just another object, merchandise that can be traded. However, if we think of our body as an object, we cannot but recognise that it "is a magical object that is never situated statically, like a rock at the base of a wall" (Henry, 2007, p. 265), but that it is in constant movement, whether this is updated or not, incessantly manifesting particular reactions prior to any reflection. And the fact is that, as Merleau-Ponty (1975) observed decades ago, the body has its own intentionality independently of the mind, derived from a unique relationship with the world and with everything that surrounds it. So, it should in no case be regarded, as it often seems to be, as an inert element that can be freely manipulated through a particular mental discipline but more as something that, faced with particular stimuli, presents its

[5] The story can be found at: https://www.antena3.com/noticias/sociedad/experiencia-lgtbfobia-traves-realidad-virtual_2023070264a1d3bf41e0620001bef9cd.html

own intentionality, and so the relations that it weaves with the world are what merits analysis (Willatt & Flores, 2022).

Although there are underworlds which only those who have extensive knowledge of computing can access, the cyberspace that anyone can simply and easily access stands out for being open and public and demanding presence and transparency. However, this is not something that can be done in any way, but instead requires sticking to some well defined and marked social standards. Accordingly, we must "learn to live in a state of media exposure, producing artificial persons, doubles or avatars with a twofold purpose: on the one hand, we position ourselves in visual media, and, on the other, we protect our biological bodies from the gaze of the media" (Grois, 2014, pp. 14-15). The fact is that our biological bodies are never perfect; they become ill, age, hurt and suffer, but this is not how the network wants them. The social standards of public presentation that existed before the internet were transferred into this new space despite its configuration having little to do with that of an analogue world where there were many possibilities to be able to enjoy private times and spaces away from the public gaze. Here everything is public and, having reached the point in which the internet accompanies us at all times thanks to smartphones and other similar devices, the I that we present and the one that we are must be the same, but it never is, thus logically resulting in a crisis of identity (Elias & Gill, 2018) and even problems being able to relate to others in a profound way (Forbes, 2017). Because of this, it is quite common for people to experience a deep sense of loneliness, despite seemingly being more accompanied than ever (Turkle, 2011). Their bodies, the bodies that they are, come to manifest themselves and argue that they cannot be so distanced from the body that they have. The body cannot be possessed. Cyberspace and the broad possibilities of presentation of our I through avatars that can improve and optimise our bodies can lead us to believe that we can possess them, but ultimately, one way or another, we fail in the attempt because we do not have a body; instead we are a body, and the internet, in the way that it is configured, does not facilitate our being it.

In the field of education, this is easily observable if we analyse the cases of teachers who have come to be recognised as *influencers*; that is to say, individuals "who have created a broad network of followers and are considered to be opinion leaders with great social influence within this network" (Leung *et al.*, 2022, p. 228); in this case, the field of teaching. They are teachers who share materials, methodologies, activities and advice relating to their teaching work, as well as recording videos and classes that they post on their networks to be viewed at any time. Although some of them receive money in exchange for this, the great majority do it for free, and so do not feel comfortable with the label of *influencer*, which comes from the field of marketing and clearly has commercial implications (Marcelo *et al.*, 2022). Nonetheless, when we consider their online presence and how they have achieved such success and influence in more depth, we realise that it is no way down to chance.

To be successful online and achieve this many followers, it is necessary to fulfil a series of requirements. Pattier (2021) lists the factors for success for so-called *edututubers*, who record educational videos and post them on YouTube, such as the duration of the videos, the type of shot chosen, their content and the diffusion strategies. Other elements that influence gaining followers are presenting a personality and physical appearance that meet certain norms and the inclusion of private and personal experiences that position them as successful subjects but also ordinary people (Azzari & Mayer, 2022). Accordingly, as their success depends on networks of a whole series of conditioning factors, that are not so much pedagogical as fundamentally of a media character, many of them come to concern themselves more with their egos, their personal appearance and fulfilling the desires of those who might give them a *like* and so increase their fame and recognition, more than with the educational character of the content they post on their networks (Shelton *et al*., 2020). So, the teacher's body ends up becoming merchandise, a market object, as a result of the demands of a network that subordinates success and relevance to a way of being and appearing that is specific and at the same time standardised that has little or nothing to do with their authentic uniqueness and their teaching work.

As with the figure of the shaman in some indigenous tribes, analysed years ago by Lévi-Strauss (1995), where a great shaman was not one because he cured many ill people, but instead cured ill people because the faith of the group made him a great shaman, the best-known *edu-influencers* do not get recognition so much for the results of their teaching work as for the number of followers and *likes* that they gather. The figure of the teacher is, therefore, objectified in the sense of being commodified, which inevitably hinders his or her role as an individual with a particular bodily and mental uniqueness, who tries to introduce new generations to the world, at the same time as trying to help them find their own identity (Bárcena, 2020).

This, however, is not the fault of these teachers but is because the context in which they move demands of them a certain behaviour, to which they are pushed, while at the same time they complain of this fact because however much they try to adapt their bodies, they cannot escape from the uniqueness that characterises them (Shelton *et al*., 2020). And the fact is that the platforms of *onlife* reality do not reflect of the social, but instead produce it in accordance with determined parameters defined principally by the companies that are behind them (Van Dijck *et al*., 2018). As the internet is a corporatised space, a particular datafied body is demanded, that has nothing to do with the relation of the individual with the body, which, from an educational point of view, could be considered adequate. This is why it is important that in the field of education we foster acceptance of, the exercise and care for the body we are, the need to listen to it, to care for it and, above all, to not try at all costs to dominate it (Almeida *et al*., 2023). Cyberspace, which now encompasses everything, promotes precisely the opposite, and this, as we have seen, affects us

all equally, children, families and teachers. Whether we like it or not, we are body, our body, not the ideal defined by standardised patterns. Therefore, today more than ever it is essential that we insist on and develop educational strategies that help us to learn to be it and recognise it truly.

5. In conclusion: the pedagogical challenge of digital materiality

We started this work by arguing that whether things leave a trace on us depends on the level of intimacy that we establish with them. The things that surround us have the potential to shape us if we let them. However, for several years now, things seem to have diluted in an *onlife* society that moves in an accelerated and at the same time standardised way. Things have not disappeared. Instead, their materiality, as we understood it up to now, has transformed. We find ourselves facing a new materiality that is intangible but at the same time material, that offers a new way of understanding objects, spaces and bodies, based not on their tangible character, but on their capacity to influence our way of being and our behaviour.

Things from the *onlife* world influence us, they demand from us certain attitudes, behaviours and ways of relating with ourselves and with others, from the point of view of the mind, but also of the body. As this materiality lacks a tangible character and is malleable, it could give us the impression that it is at our disposal and that its good or bad use would solely depend on what our wills, desires and thoughts decide to do with it. Nonetheless, this is very far from being true; although the things of cyberspace cannot be touched, they contain matter and this demands of us the development of identities with very specific ways of being in the world. These, as we have been able to observe both in the analysis of AI objects, as in the classrooms of the future and in datafied bodies can be included under the umbrella of an important lack of uniqueness and a radical standardisation of everything that is human.

Hannah Arendt (1993) said that

> if action as beginning corresponds to the fact of birth, if it is the actualization of the human condition of natality, then speech corresponds to the fact of distinctness and is the actualization of the human condition of plurality, that is, of living as a distinct and unique being among equals (p. 207).

The possibility of bringing something new into the world and of differentiating oneself from others of one's own species through the word are for her the two fundamental characteristics of the human being that distinguish it from other animals. Taking this into account, losing in uniqueness and gaining in standardisation means losing in humanity. It is for this reason that, from a pedagogical perspective, encouraging the construction of self identity and the capacity to create and contribute originally becomes an imperative that must guide all educational practice. Nonetheless, for this, it is not enough to work with and on people, but rather it is necessary to deal

with things so that they allow the configuration of this uniqueness. The things of cyberspace have been created and configured taking into account the interests of technology companies outside the world of education whose sole aim is financial gain. Educational professionals must make it their fundamental aim to offer current and future generations a whole educational experience that makes them develop not only as clients, spectators, workers or users, but primarily as human beings. Therefore, it is important to create in them a notion of object, of space and of body to hold on to, but not in the sense of buying and selling mentioned in the story by Saramago with which we started, but in the sense of a support, a home, a refuge, to which García Montero referred; that is to say, material elements that help us to settle what and who we are, in order to gain security when deciding what and who we want to come to be. There are already some examples of educational work on this line of humanising the digitalised world through pedagogy (Vansieleghem *et al.*, 2019), however, there are still not enough. For there to be more, it is vital that everyone in the field of education is aware that intangibility does not mean a lack of materiality and absolute neutrality, but rather a distinct materiality whose grammars must be recognised and known in order to be able to act pedagogically and consequently to guide.

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