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Digitalisation and poverty in Latin America: a theoretical review with a focus on education

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This theoretical review/metatheory examines different theoretical approaches to digitalisation. With a focus on education, it analyses how the digitalisation of Latin American populations in vulnerable contexts is understood in 87 documents published by Latin American institutions between 2000 and 2022 that met the inclusion criteria. An inductive coding analysis of their theoretical perspectives on ICT and digitalisation was conducted, yielding four categories as results: a tendency toward (1) a humanistic model of digitalisation, (2) with a social focus, (3) a sociocultural perspective, and (4) a communitarian-substantialist understanding of ICT. The implications of these theoretical perspectives for education are discussed in terms of the aims and expectations placed upon digitalisation and can serve as a theoretical basis for public educational policies seeking to advance development in Latin America, understood in human, not just economic, terms.

Introduction

The Economic Commission for Latin America and the Caribbean (CEPAL, 2022) reports that the number of people living in extreme poverty in this region increased to 86 million in 2021 as a consequence of the COVID-19 pandemic, with a 7.9% decrease in regional GDP in 2020. These figures reveal the devastating impact of the health crisis in this part of the Americas, which was already facing significant social and economic challenges. Much of the progress made in poverty reduction over the last two decades has been lost (World Bank, 2021).

Although many factors contribute to poverty in Latin America, digitalisation is considered one of the structural knots for development. The potential of information and communication technologies (ICTs) can be harnessed to benefit the poor, as they are creating new opportunities that can be leveraged to support human development and poverty reduction strategies. However, several requirements must be met for this potential to be realised. Public policies are needed not only to support the *provision* of accessible and low-cost infrastructure, but also to promote the *demand* for ICTs through contextualised information and local services for the most vulnerable. To foster this demand, investment in training and awareness campaigns is essential. As Solorio et al. (2023) point out, community participation, particularly that of vulnerable groups, in policy areas such as digitalisation and digital education is crucial for successful implementation. Therefore, there are both objective and subjective conditions that must be met for the digitalisation of the populations living in vulnerable conditions to be effective. Objective conditions include material, political and economic factors that enable or impede the shift from physical to virtual environments. Subjective conditions, both individual and social, are equally important.

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Individual subjective conditions refer to digital competence, encompassing the capabilities individuals must develop to be active digital citizens rather than passive subjects (Cortina, 2001). Social subjective conditions pertain to the social perception and assessment of digitalisation, which not only enable it—as is the case with objective conditions—but also legitimise it, making it desirable or even normative.

In addition, the contribution of digitalisation to poverty reduction depends on the theoretical perspectives that underlie the digitalisation process. In other words, the extent to which digitalisation can be harnessed to improve the lives of disadvantaged populations depends on the very understanding of digital technologies and how the digitalisation process is conceived in the region. Without a social understanding, digitalisation can perpetuate inequalities and further marginalise disadvantaged groups, distancing them from their rights as citizens. Therefore, as stated by Pick et al. (2007), the Latin American perspective on the problem of development is key for effectively approaching and understanding digitalisation and its institutionalisation. In this context, the contribution of this article is twofold: on one hand, it compiles and analyzes the educational articles that have been published on digitalisation and poverty by Latin American institutions since the turn of the century with the aim of directly listening to the voices of those involved, avoiding the imposition of alien understandings of the phenomenon and solutions that come from contexts foreign to the characteristics of this region (Gascó-Hernández et al., 2006). On the other hand, it focuses on the theoretical perspectives on digitalisation underlying those studies to critically analyse their actual potential to advance the development and their ambiguities.

Here development is understood from a human and not purely economic perspective based on Ignacio Ellacuría's liberation project in the context of 'the unlivable lives of the poor in El Salvador and other third world countries' (Espinosa, 2022, p. 2). Ellacuría's philosophy of historical reality (1990a) is an original theoretical contribution that emerges from the Latin American context and whose international significance is increasingly acknowledged. He understands history as the fundamental reality and conceives it as a complex dynamic totality that comprises various dimensions as structural moments (the material, the biological, the psychological, the personal, the social, the political, the ideological), in line with Zubiri's philosophy (1995). Unlike Hegel, Ellacuría asserts that 'it is not a logical reason that drives the development of historical reality in a predetermined teleological way, but human praxis' (Espinosa, 2022, p. 2). Thus, reality is open in its dynamism and demands a critical analysis of its objectified structures and the transformation of those that are not *true*, *good* and *politically adjusted*, in correspondence with the *epistemological*, *ethical* and *praxical/political* dimensions of reality.

Ellacuría's thought can serve as a theoretical framework for identifying ideologizations (not just ideologies) within the digitalisation process that offers a distorted picture of reality and legitimize the current state of affairs, in which most of the population is unable to use ICTs for their social advancement. Those ideologizations hinder the potential contribution of technologies to the common good or, in Ellacuría's terms, to a universalizable civilisation project that provides an opportunity for everyone's humanisation. Ellacuría's critical analysis of historical reality and its objectified structures can be applied to the theoretical perspectives underpinning digitalisation by posing the three questions he asks: To what extent are they *true/right*? To what extent are they *good/fair*? And to what extent do they *adjust* to their immediate context? Just as with social structures, the theoretical perspectives on digitalisation set certain limits to human praxis: they open up some options, enable the creation of some possibilities, and rule others out.

In this line, it is acknowledged that despite the centrality of metatheory to research and practice, research studies rarely have a strongly articulated philosophical foundation (Prestwich et al., 2014). However, when such a foundation is present, it is valuable to study the theoretical perspectives underlying these studies in and of themselves (Allana and Clark, 2018) to understand how digital inequality is ultimately explained. This is increasingly recognised as a crucial area for methodological advancement (Campbell et al., 2014).

In education, only a few theoretical reviews/metatheories regarding digitalisation can be found. Herrero-Diz et al. (2016) examine the theories that explain minors as creators of digital content. Martino and Spoto (2006) analyse the methodological and formal perspectives on social networks and their relationship with ICTs. López-Núñez et al. (2022) focus on how new methodologies positively influence the reduction of learning difficulties in primary school students and students with attention deficit hyperactivity disorder. While not a metatheory, the study by Ngwenyama and Morawczynski (2009) presents the factors affecting ICT expansion in five Latin American countries with an economic focus. However, none of these studies has focused on vulnerable populations, and only a few have taken Latin America as a reference point (Stratton and Nemer, 2020), which is the intention here.

Accordingly, the research questions that guide this study are the following: what are the theoretical perspectives on digitalisation of educational research published between 2000 and 2022 that focus on the population living in poverty in Latin America? What are the implications of these ways of understanding digitalisation for development? In other words, based on the goals attributed to technology and the expectations over it, how well do those theoretical perspectives serve as a framework for contributing to development? To answer them, the following objectives were pursued:

- (1) Identify scientific educational documents on the digitalisation of populations in vulnerable situations and describe their main contextual characteristics.
- (2) Examine the conceptualisation of digitalisation proposed in them based on the aims attributed to it, the expectations about it, and the understanding and importance given to both objective and subjective conditions for digitalisation.
- (3) Distinguish several categories that emerged from the analysis of the selected documents. These categories can be understood as different theoretical approaches to digitalisation, each serving human development to varying extents.

Methods

Study context. The present theoretical review focuses on Latin America and seeks to identify all the scientific educational articles published on the digitalisation of people living in disadvantaged contexts of this region between 2000 and 2022 with the purpose of understanding their theoretical perspectives on digitalisation.

The time frame between 2000 and 2022 was selected because this period encompasses significant legislative and policy developments in the field of digitalisation and digital education across Latin America. Since the early 2000s, many countries in the region have implemented national strategies and reforms promoting the digitalisation of education, such as Argentina's *Conectar Igualdad* [Connect Equality] programme since 2010, which aimed to distribute laptops to students and teachers, enhancing digital literacy, or Colombia's *Computadores para Educar* [Computers for Education] initiative since 2001. Additionally, key educational reforms, including Chile's General

Education Law of 2009 and Ecuador's Organic Law of Intercultural Education of 2011, have incorporated specific guidelines for integrating ICT into their educational systems. This legislative and policy context justifies the selection of this time frame, allowing for a comprehensive analysis of the evolution of digitalisation and its conceptualisation in educational scientific articles across the region.

Study design. Theoretical reviews or metatheories are a type of systematic review that involves scrutinising the theoretical perspectives of a group of studies, including their epistemology, assumptions and contexts (Paterson et al., 2001; Thorne et al., 2004). For Nicholas et al. (2006), theoretical reviews explore the sociohistorical, paradigmatic, tangential and idiosyncratic perspectives inherent in understanding a topic at a given time and place. In other words, they analyse latent theories understood as broad perspectives, which make claims about the nature of reality and philosophically underpin research and practice in any field of study (Allana and Clark, 2018). While reviews of empirical data seek to minimise the bias of the methodological quality of the primary studies, theoretical reviews are not even certain that the concept of bias is substantially meaningful, as their main contribution is aimed at 'opening up' the reviewers' thinking about the research topic and broadening the potential space for generating hypotheses for future effective interventions (Campbell et al., 2014).

The question that guided the present theoretical review was structured according to the Patient, Intervention, Comparison, Outcome (PICO) methodology (Page et al., 2021): How is the digitalisation of the populations living in vulnerable contexts in Latin America approached conceptually? Guided by broad inclusion criteria, it seeks to explore the theoretical approaches underlying the documents under study (Campbell et al., 2014).

Data set. Following the guidelines of the Cochrane Handbook for Systematic Reviews (Higgins et al., 2022), the following inclusion criteria have been used: empirical and theoretical studies; written in Spanish, English or Portuguese; published in scientific journals between 2000 and 2022 by Latin American institutions; referring to Latin American populations in a situation of vulnerability. Vulnerability is understood as conditions where individuals, due to certain social, cultural, economic, psychological, age, and/or gender factors, are helpless, defenceless, or in a fragile position regarding access to information and the ability to act as citizens through digital mechanisms (Helsper and Smahel, 2020).

The exclusion criteria eliminated systematic reviews and studies not related to the field of education, those that do not explicitly mention an interest in populations in contexts of poverty, and those conducted by Latin American organisations that do not take the population of this region as the study object.

The descriptors used to search the documents were 'digital' and 'ICT' combined with the Boolean operator AND for the terms 'divide,' 'gap,' 'inclusion,' 'at risk,' 'inequality,' 'poverty,' and 'vulnerab*', all of which were searched for in the title, abstract or keywords (Fig. 1). These terms were chosen based on previous studies related to the topic (Camilli and Römer, 2017; González-Zabala et al., 2018; Martínez-Bravo et al., 2020).

The literature review was carried out by consulting the general databases SCOPUS and Web of Science as well as specific education (ERIC) and communication (Communication & Mass Media Complete) databases, and DIALNET, which provides access to documents published primarily in Spanish or addressing Hispanic topics.

For the review process, which met the PRISMA criteria (Page et al., 2021), a coding manual (authors, publication year, title,

journal, abstract, study objectives, research question, methodological design, main results, conclusions, limitations and outlook) was prepared in Excel and shared among the researchers. Of the 1495 manuscripts found, 374 were included in the first round, of which only 227 met the inclusion criteria in the second round. This number decreased to 156 in the third round, and in the fourth and final round, the total number of manuscripts selected was 87 (Fig. 2).

Data analysis modes and theories. The qualitative analysis of the theoretical perspectives was carried out in two phases. The first phase, exploratory in nature, involved a general description of the studies. The second phase consisted of a critical examination of the different frameworks for understanding the digitalisation of disadvantaged populations, aiming to reveal similarities and discrepancies within and between the studies (Paterson et al., 2001). This type of analysis, aligned with a more discursive synthesis approach, was characterised by a reflexive and iterative process in which the research production was assumed as a socially constructed reality, culturally linked to sociohistorical and geographical contexts (Thorne et al., 2004).

The analysis was carried out using the inductive (bottom-up) criterion, and thus, all the categories were emergent (Bingham and Witkowsky, 2022). Each researcher coded based on the most frequent topics related to the conceptualisation of digitalisation concerning disadvantaged populations. The main categories identified were then pooled together, allowing for the reduction, synthesis and comparison process to be accomplished. Atlas.ti8 was used in both phases.

Results

General description of the studies. The 87 final documents, numbered in Appendix 1, were published between 2004 and April 2022, although 64.29% of them are concentrated between 2015–2022, with a peak in 2020 and 2021. Between 2001 and 2003, and in 2005, there were no publications that met the inclusion criteria (Fig. 3).

The studies were conducted with the participation of universities and research centres from Mexico (1,8,11,13,14,18,31,34,35,42,46,48,51,58,60,63,67,72,80,84,85), Colombia (3,4,6,10,30,32,44,45,47,53,66,73,84), Brazil (16,17,22,33,39,55,64,65,68,74,75,76,79,86), Argentina (19,21,37,40,56,70,78,82), Chile (26,27,29,52,54), Peru (20,50,71), Uruguay (7,61), Bolivia (5,28), Ecuador (57,81,83,87), Costa Rica (69), Nicaragua (43), the Dominican Republic (9) and Venezuela (36). Collaboration with universities out of the Latin American context came from the USA (5.05%), Canada (2.02%) and Spain, Botswana, New Zealand, Turkey and the United Kingdom (1.01%); although 8.08% does not provide this information.

Theoretical perspectives on digitalisation. Four categories emerged from the analysis (Table 1). Each category represents a twofold understanding of digitalisation. Although these understandings are presented as binomials, they make up a continuum, and the articles' theoretical perspectives lie somewhere along this continuum, sometimes revealing ambiguities. The articles highlight different aspects of these categories, thus showing some of their assumptions and committing to certain understandings of digitalisation. The explanation and discussion of these categories are approached in the next section. In this 'Results' section, the studies are classified under these theoretical perspectives, with evidence provided for this classification. Not all the studies are classified under all categories, as some articles focus on only some categories.

SCOPUS	Communication & Mass Media Complete	WOS	ERIC
<p>(TITLE(digital) AND TITLE-ABS-KEY("at risk")) AND PUBYEAR > 2000 AND PUBYEAR < 2022 AND (LIMIT-TO (DOCTYPE,"ar"))</p> <p>The same search string was used for the following keywords:</p> <p>DIGITAL (TITLE) + DIVIDE (TITLE-ABS-KEY) DIGITAL (TITLE) + GAP (TITLE-ABS-KEY) DIGITAL (TITLE) + INCLUSION (TITLE-ABS-KEY) DIGITAL (TITLE) + INEQUALITY (TITLE-ABS-KEY) DIGITAL (TITLE) + POVERTY (TITLE-ABS-KEY) DIGITAL (TITLE) + VULNERAB* (TITLE-ABS-KEY)</p> <p>ICT (TITLE) + DIVIDE (TITLE-ABS-KEY) ICT (TITLE) + GAP (TITLE-ABS-KEY) ICT (TITLE) + INCLUSION (TITLE-ABS-KEY) ICT (TITLE) + AT RISK (TITLE-ABS-KEY) ICT (TITLE) + INEQUALITY (TITLE-ABS-KEY) ICT (TITLE) + POVERTY (TITLE-ABS-KEY) ICT (TITLE) + VULNERAB* (TITLE-ABS-KEY)</p> <p>TECHNOLOGY (TITLE) + DIVIDE (TITLE-ABS-KEY) TECHNOLOGY (TITLE) + GAP (TITLE-ABS-KEY) TECHNOLOGY (TITLE) + INCLUSION (TITLE-ABS-KEY) TECHNOLOGY (TITLE) + AT RISK (TITLE-ABS-KEY) TECHNOLOGY (TITLE) + INEQUALITY (TITLE-ABS-KEY) TECHNOLOGY (TITLE) + POVERTY (TITLE-ABS-KEY) TECHNOLOGY (TITLE) + VULNERAB* (TITLE-ABS-KEY)</p> <p>Then, for each search, results were filtered by country and language. Regarding "Country/territory", only Latin American countries were selected. Regarding "Language", only articles in English, Spanish or Brazilian were considered.</p>	<p>TI DIGITAL AND AB "AT RISK"</p> <p>The same search string was used for the following keywords:</p> <p>DIGITAL (TI) + DIVIDE (ABS) DIGITAL (TI) + GAP (ABS) DIGITAL (TI) + INCLUSION (ABS) DIGITAL (TI) + INEQUALITY (ABS) DIGITAL (TI) + POVERTY (ABS) DIGITAL (TI) + VULNERAB* (ABS)</p> <p>ICT (TI) + DIVIDE (ABS) ICT (TI) + GAP (ABS) ICT (TI) + INCLUSION (ABS) ICT (TI) + AT RISK (ABS) ICT (TI) + INEQUALITY (ABS) ICT (TI) + POVERTY (ABS) ICT (TI) + VULNERAB* (ABS)</p> <p>TECHNOLOGY (TI) + DIVIDE (ABS) TECHNOLOGY (TI) + GAP (ABS) TECHNOLOGY (TI) + INCLUSION (ABS) TECHNOLOGY (TI) + AT RISK (ABS) TECHNOLOGY (TI) + INEQUALITY (ABS) TECHNOLOGY (TI) + POVERTY (ABS) TECHNOLOGY (TI) + VULNERAB* (ABS)</p> <p>Results were filtered by publication date.</p>	<p>(TITLE(digital) AND TITLE(inequality)) AND PUBYEAR > 2000 AND PUBYEAR < 2022 AND (LIMIT-TO (DOCTYPE,"ar"))</p> <p>The same search string was used for the following keywords:</p> <p>DIGITAL (TI) + AT RISK (TI) DIGITAL (TI) + VULNERAB* (TI) DIGITAL (TI) + POVERTY (TI)</p> <p>ICT (TI) + INEQUALITY (TI) ICT (TI) + AT RISK (TI) ICT (TI) + VULNERAB* (TI) ICT (TI) + POVERTY (TI)</p> <p>DIGITAL GAP (TI) DIGITAL INCLUSION (TI) DIGITAL DIVIDE (TI)</p> <p>For each search, results were filtered by research areas and language, considering only articles related to "Education & Educational Research" and published in English, Spanish and Brazilian.</p>	<p>(TITLE(digital) AND TITLE(inequality)) AND PUBYEAR > 2000 AND PUBYEAR < 2022 AND (LIMIT-TO (DOCTYPE,"ar"))</p> <p>The same search string was used for the following keywords:</p> <p>DIGITAL (TI) + AT RISK (TI) DIGITAL (TI) + VULNERAB* (TI) DIGITAL (TI) + POVERTY (TI)</p> <p>ICT (TI) + INEQUALITY (TI) ICT (TI) + AT RISK (TI) ICT (TI) + VULNERAB* (TI) ICT (TI) + POVERTY (TI)</p> <p>INFORMATION AND COMMUNICATION TECHNOLOG* (TI) + POVERTY (TI) INFORMATION AND COMMUNICATION TECHNOLOG* (TI) + INEQUALITY (TI) INFORMATION AND COMMUNICATION TECHNOLOG* (TI) + POVERTY (TI) INFORMATION AND COMMUNICATION TECHNOLOG* (TI) + VULNERAB* (TI) INFORMATION AND COMMUNICATION TECHNOLOG* (TI) + AT RISK (TI)</p> <p>TECHNOLOGY (TI) + POVERTY (TI) TECHNOLOGY (TI) + AT RISK (TI) TECHNOLOGY (TI) + INEQUALITY (TI) TECHNOLOGY (TI) + VULNERAB* (TI)</p> <p>DIGITAL GAP (TI) DIGITAL INCLUSION (TI) DIGITAL DIVIDE (TI)</p>
	<p>(TITLE(digital) AND TITLE(inequality)) AND PUBYEAR > 2000 AND PUBYEAR < 2009 AND (LIMIT-TO (DOCTYPE,"ar"))</p> <p>The same search string was used for the following keywords and for these periods of time: 2000-2010, 2010-2020 and 2020-2029:</p> <p>DIGITAL (TI) + AT RISK (TI) DIGITAL (TI) + VULNERAB* (TI) DIGITAL (TI) + POVERTY (TI)</p> <p>ICT (TI) + INEQUALITY (TI) ICT (TI) + AT RISK (TI) ICT (TI) + VULNERAB* (TI) ICT (TI) + POVERTY (TI)</p> <p>DIGITAL GAP (TI) DIGITAL INCLUSION (TI) DIGITAL DIVIDE (TI)</p> <p>For each search, results were filtered by country, considering only Latin American countries.</p>		

Fig. 1 Database search strings.

A humanistic vs. a capital model of digitalisation. Studies 10,26,27,31,34,36,40,41,50,53,65,68 move away from a capital model of digitalisation toward approaches that do not view it from a cost-benefit perspective. The rationale they present for ICTs access and use is not exclusively that of the *homo economicus*, linked to a utilitarian approach, although their socio-occupational impact is also acknowledged. Instead, ICT is presented as a realm for the expression and construction of individual identity and its recognition, which is subject to increasing digital mediation, and as a ‘sphere for the production of meaning’ (53, p. 119).

To illustrate this approach, studies 26 and 65 explain that the digital environment plays a role in supporting social and symbolic integration. Study 53 considers that ‘the appropriation of digital technology transcends the mere use of tools, involving a comprehensive process of cultural and social construction and interpretation’ (p. 123). As such, the transmedia context is presented as a scenario for the dynamic production of subjectivity (31,50,53). In this space, according to 31 regarding indigenous peoples—the youth must negotiate the perspectives of their communities of origin and their roots, redefining and reworking the representations of their ethnicity with an openness to the more numerous (in quantity) and heterogeneous (in quality) referents offered by the digital world.

In turn, 27 constructs a theoretical framework based on Sen (2000), whereby ICTs are conceived as contributing to development understood not only in economic terms but as an increase in people’s capabilities to achieve what they consider valuable. 36

advocates a model of technology in which ‘the social is above the economic’ (p. 714). In this regard, studies 10, 34 and 85 underline the urgent need for innovative moral leadership to connect technology with human development and make technological development sustainable. Similarly, 40 expands the term ‘digital literacy’ from the technical to the political-empowering, thus transcending an instrumental vision.

Study 35 is ambiguously situated within this first classification, as it analyzes the contribution of digitalisation to the social capital of migrants in different situations, i.e., to the creation of social networks of belonging, broadening the possibilities for their integration. It appears that the authors understand social capital in instrumental terms, referring to the security and support from a network of contacts that can be accessed through ICTs, which helps migrants better adapt to a foreign society.

In turn, in other studies, a capital model of digitalisation can be identified, as they associate this process with the achievement of different benefits of a material or economic kind and, therefore, the digital divide with exclusion from them (1,7,8,18, 20,23,26,33,34,35,39,41,42,47,70,72,73,76,77,85). Exclusion is, indeed, defined as the ‘impossibility of obtaining, leveraging, taking advantage of the benefits generated by ICTs’ (1, p. 94) that affects some population groups. 42 and 47 explain that the digital divide and digital poverty are two perspectives of the same problem: an inadequate distribution of the social gains of digitalisation, which has resulted in the social and educational poverty of certain populations and which has been exacerbated during COVID-19 (33,73,77,85). Study 35 also understands ICTs

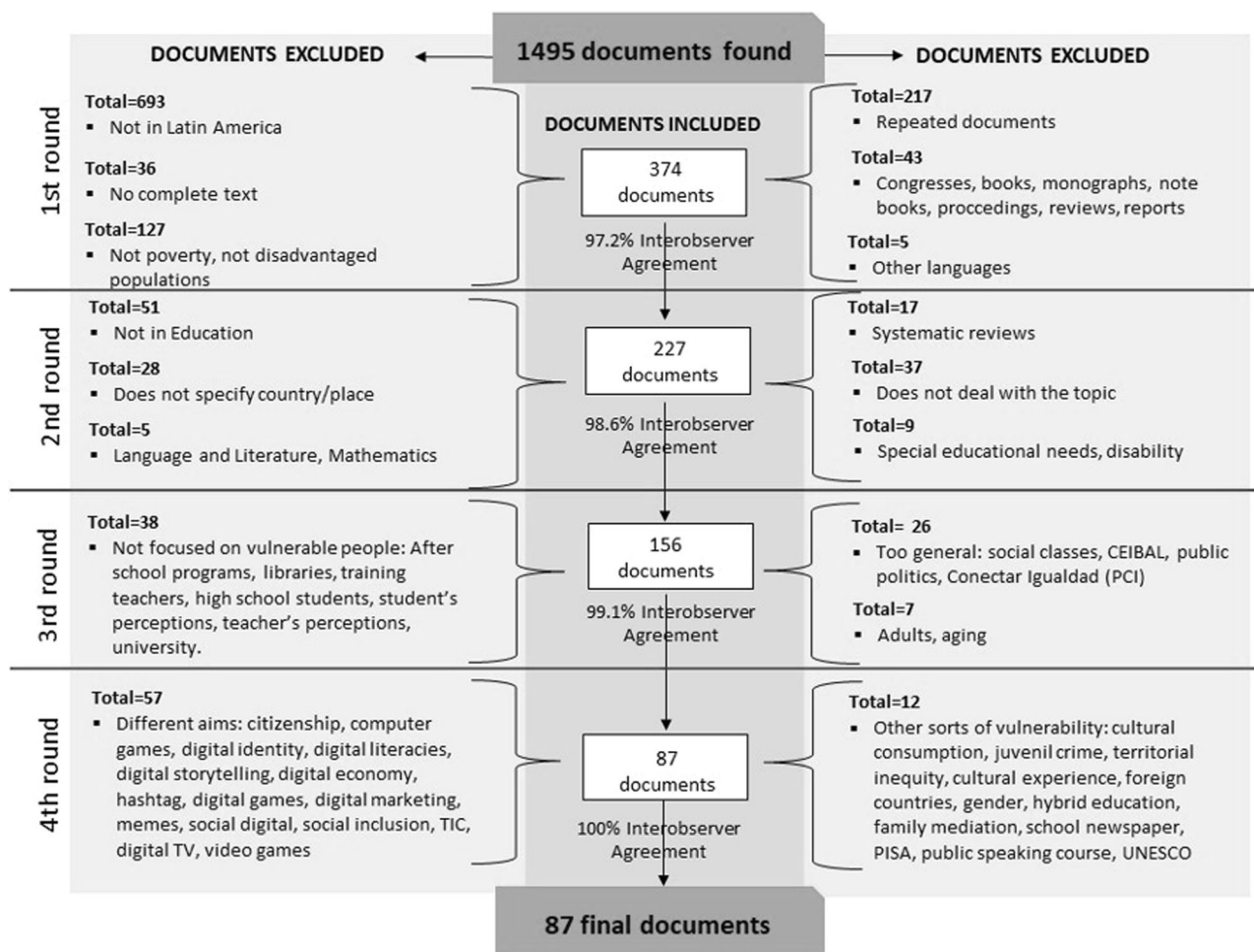


Fig. 2 Flowchart.

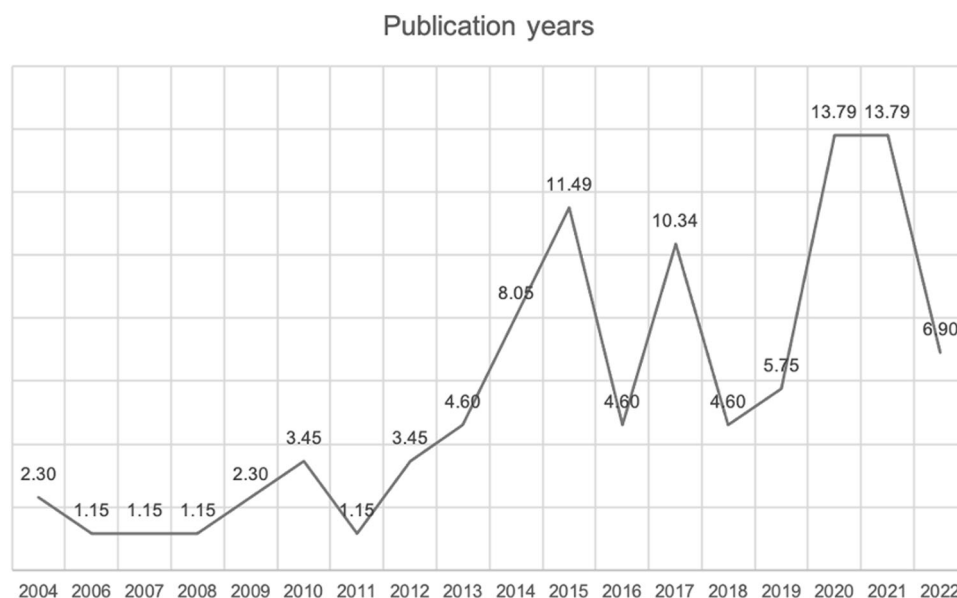


Fig. 3 Publication years.

as 'enablers and generators of different potential forms of capital' (p. 63). Nevertheless, 'benefits' is sometimes understood in a broad sense, rather than exclusively in relation to the economic perspective.

From a critical perspective on a neoliberal model, 39 discusses capitalist techno-politics, and 47 is suspicious of the neutral conceptions of the digitalisation process, arguing that it is the privileged sectors that benefit from it, while others are excluded.

Table 1 Inductive coding categories and subcategories.		
Categories	Subcategories	Codes
A capital model vs. a humanistic model of digitalisation	ICTs as economic return	Benefits Production Instrumental uses
	ICTs and identity	Expression Recognition Subjectivity Human relations Social capital
A Social vs individual function of ICTs	ICTs and production of meaning	Cultural construction and interpretation Social and symbolic integration Common good
	Social role of ICTs	Social technological appropriation Development Inequality Creation of social content E-government
	Individualism	Individual entertainment Individual consumption of content Atomism/fragmentation
	Contextual/sociocultural factors	Social perception and assessment of technology Discourses justifying ICTs Social learning Technology socialisation agents Mediation by teachers Community expectations of ICTs Social appropriation of technology Domestication of technology Self-determination Agency
Sociocultural vs. individual perspectives of ICTs	Individual freedom	Critical literacy Negative liberty Connectivity Technological infrastructure Costs Lack of technological training
	Obstacles to appropriation	ICTs for the exercise of freedom ICTs as a means Indeterminacy of ICTs
	Instructional/means-based approach to technology	Positive liberty ICTs as an end ICTs for objectives/goods ICTs as content
	Substantial vision of ICTs	Incorporation of ICTs for local aims Situational approach to ICTs
	Contextualised technological appropriation	
A Liberal-proceduralist vs. communitarian-substantialist model of technology		

Prepared by the authors.

In other words, it is only the former who, ‘by using them [ICTs], achieve a familiarisation that prepares them for the arrival of other new technologies,’ with the result that ‘the knowledge gap between these two segments is increasing’ (47, p. 141). Therefore, left to market forces and without intervention, the digitalisation process (or techno-totalitarianism, as 41 calls it) means that ICTs ‘reproduce and exacerbate social inequalities, becoming instruments for increasing differences and developing new forms of inequality’ (47, pp. 140–141).

A social vs. an individual function of ICTs. At first glance, one might expect a humanistic model to be associated with social dynamics or a social function of technology. In contrast, the capital model would be related to an individualist-instrumentalist perspective, i.e., understanding ICTs for the satisfaction of individual interests. However, this correlation is not always present in

the analysed studies. Given their focus on disadvantaged populations, there is an emphasis on satisfying basic individual needs that facilitate a dignified life. Many of the articles that align more closely with a humanistic model of digitalisation explore how ICTs can be used to improve lives affected by poverty, starting with their most urgent individual needs (e.g., labour inclusion, integration in the case of emigration). Despite this, these studies assume that it is precisely the *social* aspect of ICTs (their capacity for connectivity, collaboration and the expression and recognition of identity) that contributes to advancing the life projects of the poorest, as opposed to purely consumerist or individual entertainment uses.

In this regard, these studies emphasise the risk of educational policies that focus narrowly on extending access to technologies, making them universal, namely: that the type of use that is ultimately made of them is limited to consumption, to the satisfaction of individual desires, which are sociologically and

economically generated and can be manipulated. Thus, as 51 argues, it is possible to ‘achieve universal access without bringing about social change’ (p. 275) or, even worse, create greater inequality. To counteract this tendency observed in the digitalisation process, it is deemed necessary to adopt a ‘social vision of ICTs’, which is endorsed by articles 7,29,36,37,38,43,45,50,55,63,65,68,72,79. It means cultivating an appropriation of them for (universal) human development. In other words, students should become critical digital prosumers (37), to understand the technological process rather than merely being affected by it (55). This requires deep appropriation processes involving a range of differentiated activities that go beyond communicational and recreational uses to include informational, content creation, e-government and occupational uses. Engaging in this wide spectrum of activities requires accessing the Internet not only via mobile devices but also via computers, as the access device impacts the degree of development of digital competencies, as noted by study 29.

Study 63 presents examples of the social role that ICT can play in the political Latin American context through the various initiatives of the civic organisation *Coding Mexico*: App115 or Overthrowing the Mexican Tech Mafia, Explaining the Law, and Civic Challenges, among others. 45 describes the ‘*Kioscos vive digital*’ project intended to strengthen rural Colombian communities, while 50 sees the possibility of integrating ICTs into the cultural and social identity of indigenous groups for their own purposes as a community. These are examples of how to place digital technologies at the service of social inclusion and citizen empowerment, while also transcending a consumerist and passive use of them. Studies 36 and 43 also advocate a social approach to science and technology, but 47 expresses a discouraging vision: ‘As we move forward in... economics and technology, we move backward socially’ (p. 141).

A sociocultural vs. an individualist perspective on digitalisation. A sociocultural perspective on digitalisation, as opposed to an individual-focused perspective, is particularly prominent in studies 7,19,26,27,34,85, but is also mentioned in studies 4,21,25,40,49,58,68 as being key to the success of educational policies. According to these studies, adopting digital technologies does not result from a purely personal or individual decision once it becomes possible, but rather depends on contextual and sociocultural factors. In other words, even when the necessary conditions for adopting technology (objective material conditions such as infrastructure and connection, and subjective individual conditions such as personal competence) are met, there is no guarantee that technology will be adopted and, consequently, the digital divide may persist.

This challenges the notion that people adopt technology spontaneously, as soon as they are able to, purely as an exercise of individual freedom. In other words, even if they have the capability, they do not automatically desire to do so. This decision depends on contextual factors that shape the social perception and assessment of technology. These factors influence people’s attitudes and dispositions, such as openness to innovations or suspicion and distrust, thereby affecting their willingness to adopt technology, as 27 explains. There are thus vulnerable contexts with specific problems that make it difficult for young people to adopt certain uses of technology and develop the associated competencies. For example, the negative cultural connotation in border areas (8), the culture of rural versus urban areas, or being a victim of a conflict, as in Colombia (76), all represent barriers to adoption.

In this line, 25 analyses the causes of the low demand for ICTs among rural populations and finds out it has to do with an

‘insufficient awareness of the opportunities’ offered by technologies, which ‘reduced the potential success of the provision of infrastructure’ (p. 247). This points to the need for a bottom-up strategy that facilitates co-management and participation in highly marginalised contexts, listening to the voices and needs of stakeholders, along with education for the ongoing acquisition of ICT skills, the development and maintenance of infrastructure and the adoption of appropriate technologies.

Freedom to choose must, therefore, be understood in relation to a context rather than in a disembodied way, and this context is particularly important in the case of disadvantaged and isolated communities. To support this idea theoretically, 34 refers to Nussbaum’s (2011) theory of capabilities and, like 73, to Sen (2000): these capabilities are developed to varying degrees depending on the conditions of the context. In turn, studies 4 and 27 rely on Giddens’ Structuration Theory, according to which individuals have agency, but it is limited by the social structures that are reinforced and reproduced through collective action. Study 4 also underlines the importance of this sociocultural level by using the theoretical framework of ‘symbolic interactionism’: the interaction between subjects and, therefore, the culture they produce shapes the discourses justifying digitalisation, which act as mediators for individual interpretation. 49 emphasises the role this worldview plays in grounding the right to digital inclusion, as the demand for this right arises from a specific context defined by certain praxis and needs, which differ from those of other contexts. Therefore, according to the author, justification processes are relative to a given context and do not have so much to do with ‘the illusion of truth’ (49, p. 50), following Rorty.

In these studies, the influence of culture and community is manifested through the mediation of key community figures, who act as gatekeepers and facilitate the socialisation of technology: teachers (19,26,28,37,40,57,85), those responsible for access points (31) and, in isolated and aging populations, young people (8,21,26) play crucial roles in transmitting social values associated with technology, shaping perceptions of its usefulness, and setting expectations for its use. If this is the case, strictly speaking, ‘policies are not implemented; instead, the political text is subject to modifications and is reinterpreted by the central subjects of that practice’ (19, p. 101). In this regard, 39 adopts the critical perspective of the Frankfurt School (Adorno and Horkheimer, 2007) to analyse the emancipatory resistance to the technological cultural industry, which apparently seeks digital inclusion as an instrument of capitalist domination.

This mediation is particularly significant in the case of teachers, who are responsible for implementing educational policies for digital inclusion. Their influence on promoting a culture favourable to the appropriation of ICTs is acknowledged. For instance, 26 correlates technological appropriation by students (measured in terms of use and access) with teachers’ skills, frequency of access and expectations concerning the social and educational impact of the Internet. In its study of Argentine teachers in vulnerable schools, study 37 also concludes that they must become the driving force behind their students’ autonomous learning in the digital context. In Mexico, study 85 reveals that in the absence of government support, most teachers in rural schools take responsibility for their students’ digital learning. 20 also argues that technology ‘is wasted without the commitment from this educational actor’ (p. 49).

This emphasis on context should not diminish personal responsibility for adopting a critical perspective on both digitalisation and the culture that promotes it in specific ways. As 4 emphasises, practice ‘occurs within a temporal order’ (trajectory) and ‘a spatial order’ (framework) (p. 4), which influence action but do not determine it, as they are mediated by an interpretative process. Some studies advocate these internal

factors of critical thinking and creativity as being crucial to civic and critical digital literacy (4,39,41,70), enabling individuals to make innovative or unprecedented uses of technology.

A liberal-proceduralist vs. a communitarian-substantialist model of digitalisation. It is possible to identify a liberal view of digitalisation in some of the studies, in which the digital space appears as a new means to exercise freedoms for individual self-determination. In this view, the emphasis is on removing (external) obstacles rather than on promoting specific uses of ICT for pursuing life projects deemed valuable, as such moral assessments are considered to belong to the private sphere (1,19,28,33,36,50,53,67,77). In this liberal perspective, ICTs are presented in their indeterminacy, as means, as open realities: as 36 indicates, ‘processes to be developed’ (p. 711), something to be done, not yet established or accomplished: ‘They are only a means, not an end in and of themselves’ (p. 713). Study 53 also understands them as ‘mediations’ whose valence is yet to be determined.

The emphasis on external factors—and, therefore, on the obstacles faced—is typical of the liberal perspective: high cost, lack of infrastructure, and limited training are the most recurrent themes in relation to the poorest populations—1,33,50,67,77—, including indigenous groups—1,50—and teachers in disadvantaged contexts—19,28—. For example, study 19 highlights the lack of adequate teacher training—a deficiency that became evident during the pandemic—and argues that the educational policies implemented have not created the minimum conditions necessary for teachers to use technological equipment effectively; then, ‘without warning, without training, without Internet, there is chaos in the school dynamics’ (19, p. 111). It is akin to ‘having cars and highways and not being able to drive because one does not know how’ (67, p. 101). Study 67 also points to the high costs of the Internet, which limit access, as well as the existence of more urgent realities (‘11.3% of Mexican households do not have potable water. Almost half of the households in towns with less than 2500 inhabitants use firewood or charcoal for cooking,’ and it is thus necessary to ‘close other gaps... to bridge the digital divide’ (p. 100)). A similar situation is reported by 65 in Brazil with the construction of telecenters, without first addressing the socioeconomic precarity of excluded youth.

However, other studies highlight a problem characteristic of modern societies: after rights and freedoms have been secured and barriers to access and training have been removed, the use of ICT often remains passive, instrumental and decontextualised; technology is not leveraged to enhance the individual’s personal life project. This problem is also found in developing societies, where Internet access is increasingly universal due to mobile devices. In this case, the obstacles are not external but internal, involving the challenge of making innovative use of ICTs that contribute to personal life projects.

Accordingly, from a communitarian perspective studies 4,7,19,20,27,29,30,40,45,47,63 and 70 advocate for viewing the user as an agent focused on specific *goals* and actively using technology to achieve them, rather than as a mere recipient of existing services. Based on this sense of agency and by relating technology appropriation to *specific* practices, these studies define technological appropriation as inherently tied to these practices. As 47 argues, discussing digital literacy requires reflecting on the goals, goods and values to which individuals aspire, transcending—as 27,40 and 70 indicate—an instrumental-proceduralist perspective. Study 19 also criticises the flaw of educational digital policies where ‘the focus is on the means rather than on the content’ (p. 110). Furthermore, 4 and 70 note that ‘it is not possible to speak about generalised uses of ICTs; social actors

must make their own approach, as it is particular needs that determine appropriation processes’ (4, n.p.); in other words, a ‘situational approach’ is necessary (70, p. 103). In education, this means that it is necessary to ‘turn how each disciplinary field produces knowledge, carries out research and operates in an interweaving with technologies into a teaching object’ (70, p. 104). Therefore, the twofold dimension of abstention and provision involved in the right to digital inclusion (49) requires a concrete, specific provision focused on each of the actors and their particular aims for social transformation.

Discussion

A growing interest in the most vulnerable. The analysis of the contextual characteristics of the studies demonstrates a substantial increase in publications on the digitalisation of Latin American communities in vulnerable conditions over the last decade, with a peak between 2020–2022 related to the effects of the pandemic on impoverished populations. The health crisis has served as a catalyst to reveal the digital inequality that particularly affects Latin America (Levi, 2021). Until COVID-19, the abundant bibliography on digitalisation and digital education stood in stark contrast to the limited research explicitly focused on analysing this process among the most vulnerable, who can be found in different contexts—rural, urban and border. This has been changing over the last decade and, ultimately, following the pandemic, when it is precisely the poorest sector of the population that has attracted the attention of researchers, not only in the international context (Mkhize and Davids, 2021; Noor et al., 2020; Reuge et al., 2021) but also in Latin America.

An incipient humanistic turn of the digitalisation process.

Concerning the theoretical perspectives of the studies, the first category that emerged in the analysis identifies the ultimate aims (humanistic or capital-related (Regmi, 2015)) attributed to digitalisation (Fig. 4). These aims to establish a horizon of meaning for it and reveal the assumptions and sociohistorical perspectives from which technology is viewed, enabling—and limiting—its potential to advance human development at a given time and place.

For Regmi (2015), the capital model views digitalisation as an ‘investment through which individuals, corporations and nations can maximise their economic growth’ (p. 134). This model is grounded on the theory of human capital, which, from a neoliberal approach, is based on three assumptions: competitiveness through the maximisation of individual freedom; privatisation (knowledge is understood as a private good); and human capital formation for the economic prosperity of the individual and her nation. Critics argue that this model has created ‘a narrow, market-based conception of education, skill and talent through which agents of neoliberal globalisation have benefited’ (Regmi, 2015, p. 140).

In contrast, the humanistic model links digitalisation not only to economic growth but to the full development of the individual and the good of communities, connecting it to a social agenda pursuing justice and respect for human rights. This model is based on three assumptions: civic education (to foster active citizenship), building social capital (collaboration, coordination and cooperation) and improving capabilities for human development (Valdivia et al., 2021).

In the analysed papers, the capital perspective is present, since, for the populations living in vulnerable conditions, satisfying basic needs requires different types of capital that can be more efficiently accessed digitally. Nevertheless, the overall tone of the studies points in a different direction, suggesting a humanistic turn of technology. This aligns with recent studies (Henríquez,

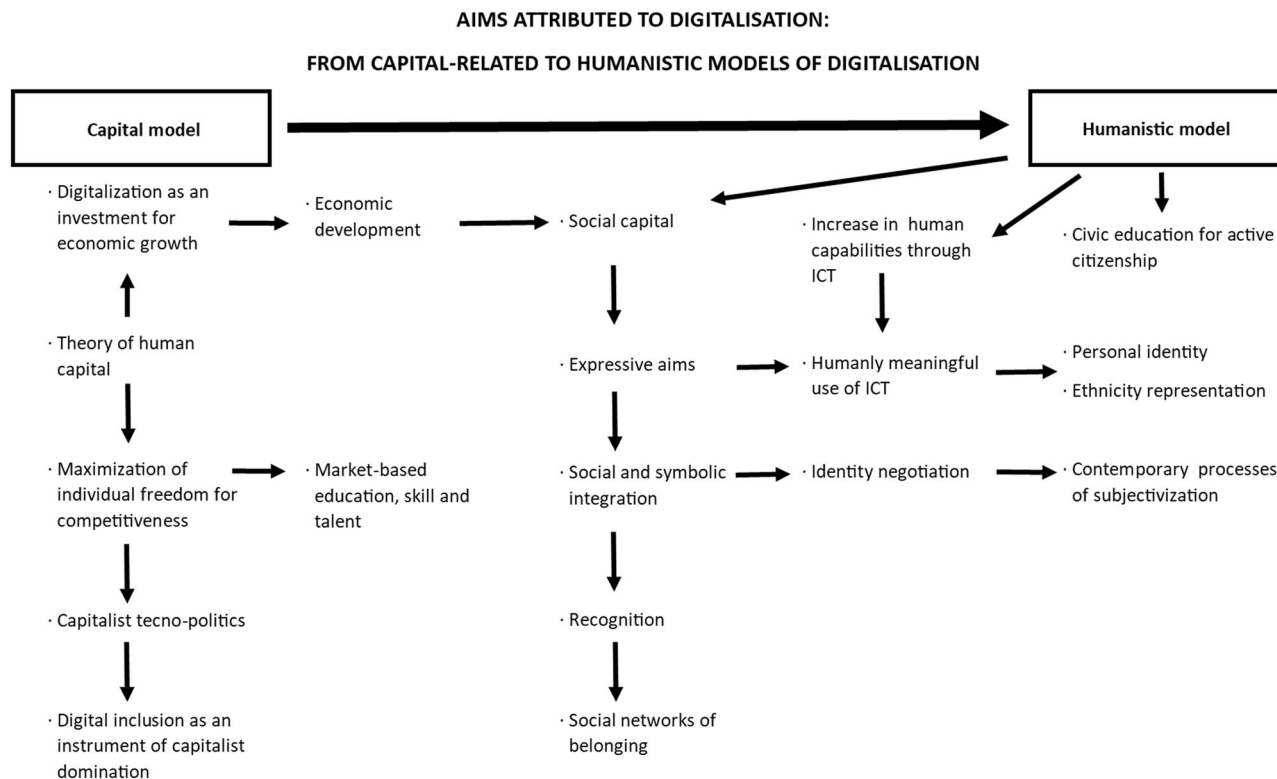


Fig. 4 Aims attributed to digitalisation: From capital to humanistic models of digitalisation.

2021; Loh and Chib, 2022; López-García, 2020), where the primary objectives of technology are improving relationships and nurturing common interests to provide humanly meaningful use of ICTs. This implies that the objectives attributed to them are not purely utilitarian, but involve expressive aims of human nature, which give them an intrinsic sense of purpose: they open up opportunities for the exercise of creativity and the expression and recognition of personal identity.

Indeed, many studies acknowledge that a mere instrumentalist perspective on technology fails to consider it appropriately and needs to be transcended. Thus, in the humanistic approach, ICTs are considered a field for imagination and human originality and, consequently, related to the individual goals that are desired. Instead of replicating already established uses, technology appropriation involves constructing one's own representations and narratives that are often alternative, or at least complementary, to the hegemonic discourse. This is a way to 'talk back' to structures of power that have erased or distorted [some people's] interests and realities', and resist an external imposition of identity, i.e., the reproduction of 'images that are produced [and attributed] from the outside' (31, p. 267). Therefore, those studies highlight the key role that ICTs play in contemporary processes of subjectivation, as a new 'public space in which some fragments of identities are shared' (31, p. 266) while they are being constructed.

From the satisfaction of ‘individuality’ to the cultivation of ‘personhood’: the social role of digitalisation. If the first category points to the fundamental aims attributed to digitalisation, the second focuses on the dynamics generated by it, i.e., how these aims are operationalised in everyday life (Fig. 5). In particular, the second category looks into the following question: does digitalisation contribute to advancing individualism and the fragmenting tendency characteristic of modern liberal societies

(Bauman and Bordoní, 2016; Gozálviz-Pérez, 2011; Taylor, 2016)? Or, on the contrary, does it counteract the atomism and disintegrative inclination of societies and facilitate the development of a sense of community, communication and belonging that contemporary physical communities are unable to confer (Keane et al., 2016)? This is particularly important in the case of disadvantaged populations, who are usually marginalised and sometimes spatially isolated, and would undoubtedly benefit from (digital) solidarity structures. It is these structures, when institutionalised, that ensure that the common good is indeed common and that rights are universal, without becoming privileges (Aznar, 2019; Ellacuría, 1990b).

Following Maritain's (1984) distinction, it can be asked whether the selected studies present the digital space as a community of individuals or a community of persons; in other words, whether digitalisation is oriented toward the satisfaction of 'individuality' or the cultivation of 'personhood,' understanding that only the latter includes the possibility of fellowship. Only in the case of the latter does the digital environment represent a realm of empathy (Rifkin, 2009), of friendly relationality—both in the conventional sense of the word and in the civic sense of friendship (Nussbaum, 2014), where the good of the other is sought for its own sake rather than solely to obtain some return. When connected to the development of personhood, the social function of ICT is highlighted and thus the participation of everyone in it as a common good and for the common good, as opposed to passive-consumerist uses, such as the individual consumption of content or its production for the individual satisfaction of 'citizens who accept the political and economic structures' instead of exercising 'active citizenship to bring about "political, economic, and social improvements" ' (Regmi, 2015, p. 141).

González-Pérez (2011) warns against the risk of ‘digital endogamy’ that ICT may pose, a form of individualism that threatens democracy. In this regard, 65 draws on Freire (1994) to

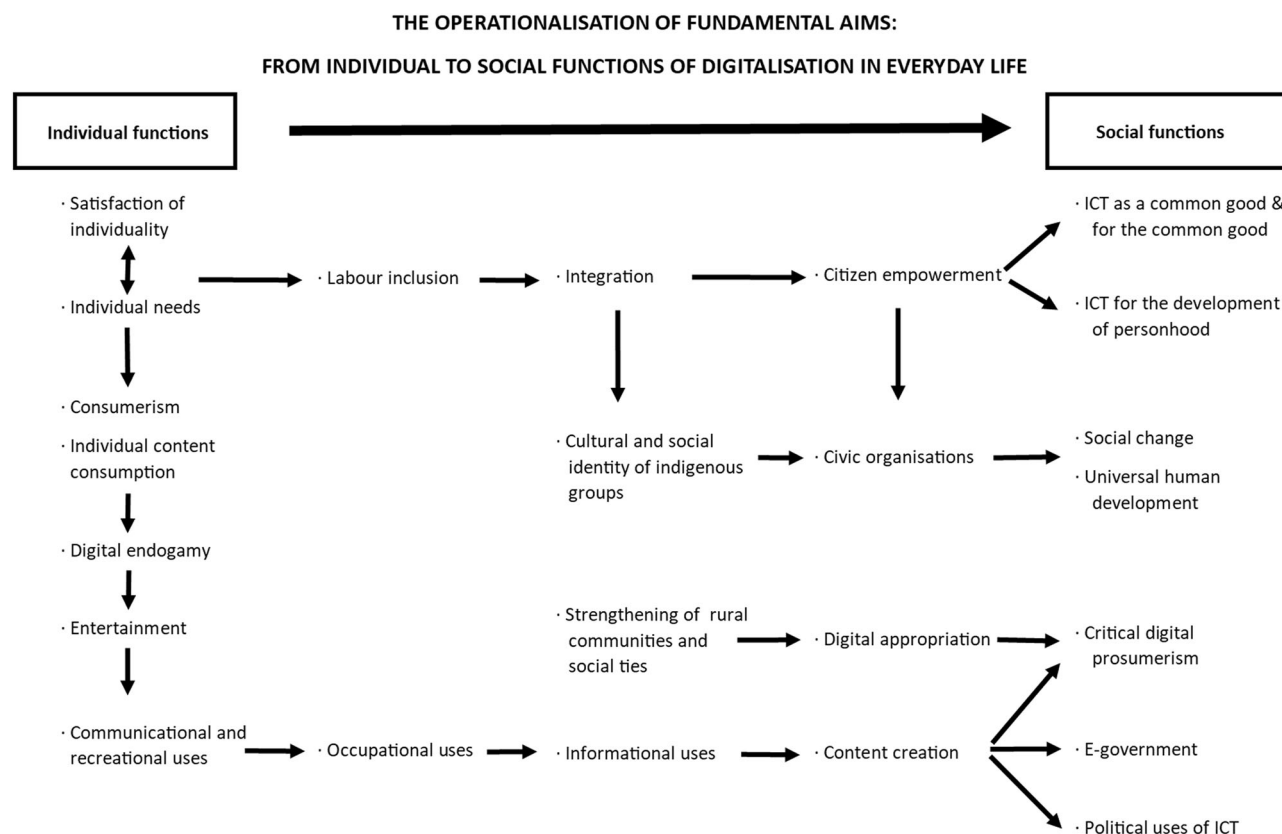


Fig. 5 The operationalisation of fundamental aims: From individual to social functions of digitalisation in everyday life.

argue that the appropriation of technology should contribute to strengthening social ties, to ‘being more in communion with other consciousnesses’ (p. 27), rather than simply having more—which would reify relationships and people.

The role of culture in digital appropriation. Regarding the third category of the sociocultural and individual factors affecting digitalisation (Fig. 6), most studies suggest that the decision to adopt ICTs depends not only on political-economic material factors (infrastructure, connection) and individual subjective factors (digital competence). While these are necessary conditions, it is also essential to have a culture conducive to ICTs that places a positive value on them and integrates them into daily activity.

Many of the reviewed studies highlight that the adoption of ICTs is mediated by the group (its dynamics, hierarchy of values and practices), and consequently, for a digitalisation policy to be effective, it must affect this culture. This involves bringing about the ‘domestication of technology’ (35), or what 4 calls the ‘social’—as distinct from the individual—appropriation of it, by including it in the culture’s spaces, times, aesthetics and functioning. Then, the integration of ICTs into communities ‘should not only involve training activities but also actions that incorporate mechanisms for constructing and negotiating the expectations that communities themselves have regarding the Internet’ (26, p. 581). The key role of culture is related to meaning (Barón and Gómez, 2012; Fuentes, 2015; Paulhiac and Ortega, 2019). This points to the complexity of the multifactorial—not only economic, political, technological, or even cognitive, but also social and cultural—and multidimensional—access, use, appropriation—phenomenon of digital inclusion, which should be mirrored in its educational approach.

The sociocultural perspective on digitalisation is based on a social learning theory (Bandura and Walters, 1977), according to

which people learn from one another (through observation, imitation and modelling). Thus, individuals gain an understanding of ICTs and the purposes they can serve through everyday interactions with others. As MacIntyre (1987) indicates, personal identity, and therefore freedom, is constructed based on connections with others, i.e., on the horizon provided by inclusion in a context. Recognising this cultural construction involves acknowledging its historical and evolving nature, as opposed to the ahistorical and apparently neutral—nonpolitical—nature of the individualistic perspective.

The influence of culture explains, at least in part, the persistence of the digital divide in subcultures such as indigenous communities. The characteristics of some places (geographically isolated), their population (aging), the economic activity carried out, as well as gender and literacy levels, are conditions that make it difficult for inhabitants to be exposed to external and heterogeneous references that include ICTs in their worldview. Consequently, their relevance and usefulness are not easily perceived. Although there are differences, something similar occurs with other population groups, such as the elderly, whose symbolic and cultural reality does not include ICTs but prioritises other values (e.g., face-to-face communication), and these cultural factors act as a barrier to digital inclusion. The same occurs in border populations, where the cultural connotations of the context (violence, police control and labour exploitation) hinder technological adoption.

Studies that focus exclusively on the lack of personal competence or the physical impossibility of access seem to assume that once the external obstacles limiting the use of ICTs have been overcome, i.e., given the objective conditions of access and connection and given the ability to use ICTs, adoption is a natural, spontaneous, immediate or automatic process, such that if a person can, they will. While this is true in many cases, it is so precisely because there are contextual factors that shape a culture or a symbolic imaginary

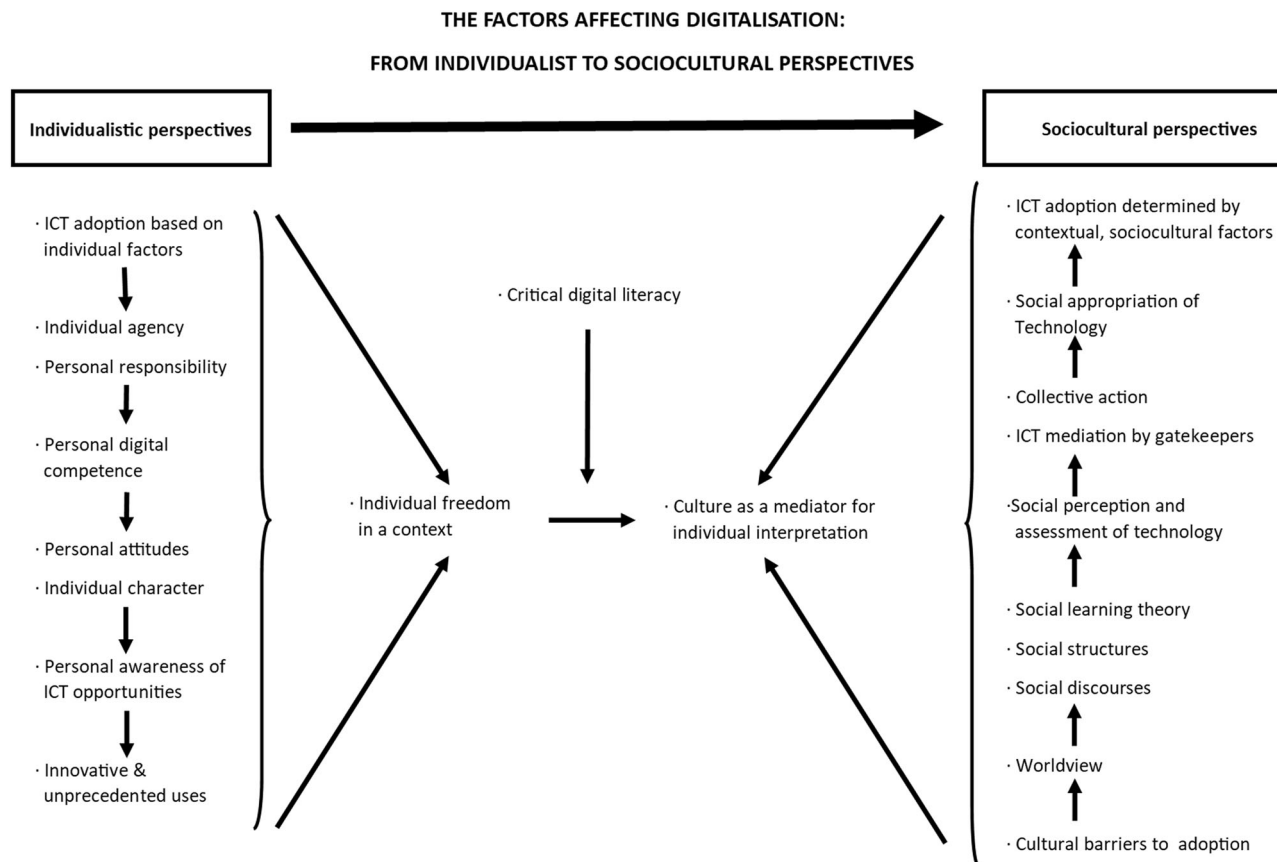


Fig. 6 The factors affecting digitalisation: From individualist to sociocultural perspectives.

aligned with the values associated with technology (immediacy, productivity, competitiveness, quantity/amplitude versus depth), which encourage adoption by positively representing digitalisation. Although its associated dangers and risks are also perceived, it is ultimately understood that the strengths and opportunities offered by digitalisation outweigh them.

The need to consider cultural elements in the design of public educational policies should not dilute the fundamental personal responsibility of becoming a digital citizen rather than merely a subject (Cortina, 2001). This entails, firstly, adopting a critical view of digitalisation as it is presented in each culture (as well as of the opposing conservative technophobic view) and, secondly, using ICTs not merely as passive consumers limited to receiving what is available in the environment, but rather as active producers seeking new uses that help transcend the current state of affairs. Although social contextual values influence desires, perceptions and assessments of reality, including ICTs, these cultural values do not determine them. Therefore, digital literacy must therefore be civic and critical, aimed at performing a 'reading of resistance' (Umaña, 2021; Walton, 2012) of the discourses in which digitalisation is presented as well as of the reality it affects. In this regard, Rivoir and Escuder (2021) warn that even being a 'digital native' does not ensure this appropriation, as, without motivation and sufficient skills, superficial recreational use of ICTs is perpetuated, which at most contributes to social integration.

From indeterminate ICTs in generalist training programmes to a communitarian-substantialist approach based on goods. The final category contrasts a liberal-proceduralist and a communitarian-substantialist approach to digitalisation (Fig. 7).

From the liberal perspective, the virtual environment is seen as another realm for exercising individual freedom, provided that the rights and freedoms of others are respected. Digital exclusion, in turn, is understood as a loss of negative liberties, as a reduction in a person's sphere of action due to external impediments (lack of infrastructure, connection, training). Consequently, the liberal perspective focuses on eliminating these external obstacles, rather than promoting specific uses of ICTs for a life project considered good or valuable. In other words, it emphasises what 'can' be done (negative liberty) rather than the goods worth pursuing (positive liberty) (Carter, 2010), thus adopting an external perspective of ICT instead of addressing internal factors. This liberal view aligns with the procedural perspective of ICTs, which focuses on rights, as opposed to a substantialist conception that recognises certain goods and aspires to pursue them (Díaz and Barrientos, 2019; Sandia et al., 2019).

The liberal model acknowledges the substantial recognition of only two goods in relation to technology: (1) freedom of access to and use of ICTs, without specifying which uses are better than others (this question is left up to the private assessment of the individual); and (2) ICTs themselves. ICTs are recognised as a good (the fundamental axis of the digital knowledge society), as they provide an additional realm for exercising individual freedom alongside the physical one. Thus, ICTs appear as a means (to exercise freedoms) and as a right, and their absence implies a reduction in freedom. Insofar as they are not directed to specific objectives, because these are excluded from the public-political realm in the liberal model, ICTs are presented in an indeterminate manner, not directed toward any particular goal. They are not associated with the attainment of specific goods that would represent the good life, except for the fundamental values

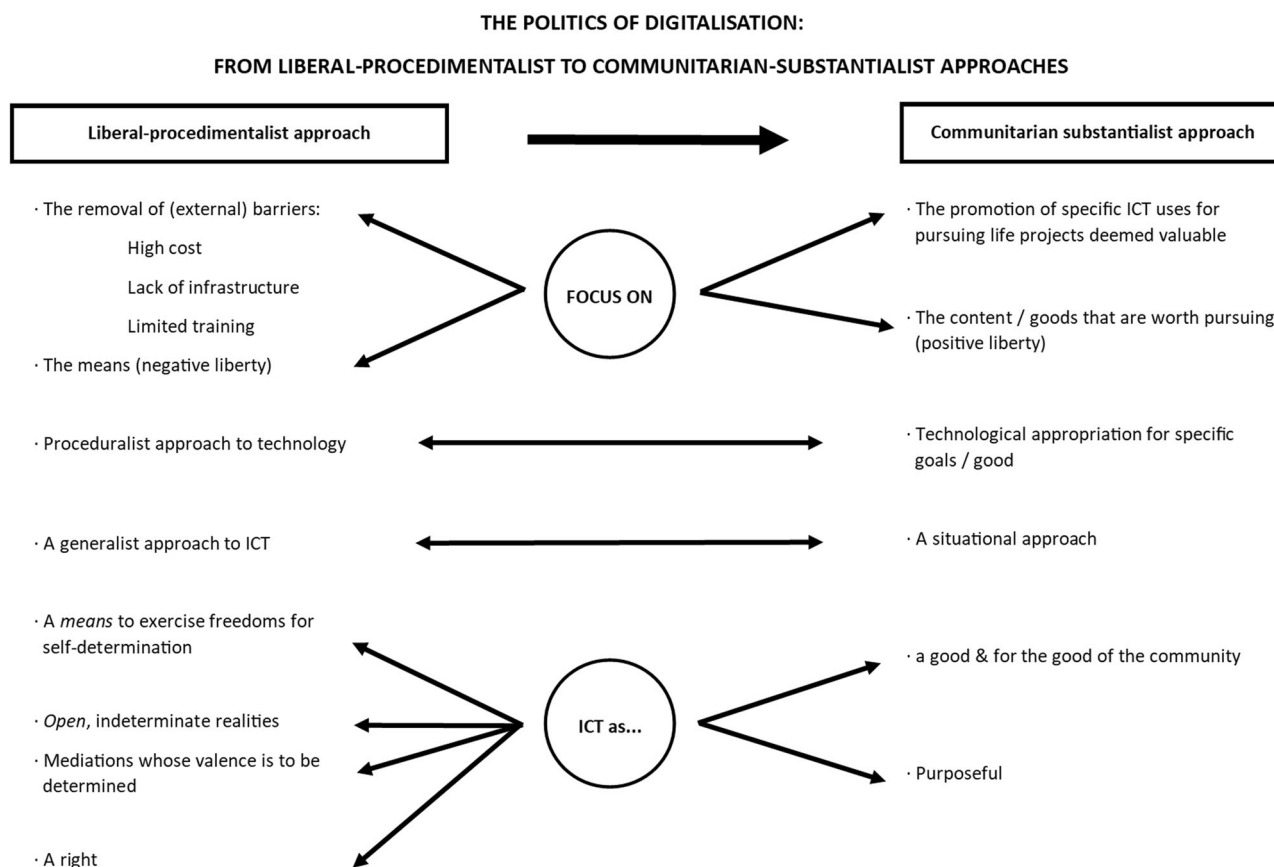


Fig. 7 The politics of digitalisation: from liberal-procedimentalist to communitarian-substantialist approaches.

of freedom and nonviolence, which are the only substantive commitments of liberalism.

This liberal perspective on ICTs can be identified in some of the selected studies when they discuss appropriation without specifying its aims, purposes, and objectives. However, these factors should determine the appropriation process, as using technology for one purpose is not the same as using it for another. In response to this, many studies argue for the need to contextualise, specify and determine the objectives of technologies. Appropriation should be considered relative to specific functions, realities and interests: depending on the pursued goals (such as eradicating poverty, ending violence in a particular educational institution, or steering young people away from criminality through public libraries), technology appropriation takes on different meanings. It is then necessary to move away from indeterminate ICTs and generalist training programmes focused solely on tool usage, and instead specify their uses based on individual functions. Consequently, policies should not be formulated from a top-down, 'technocratic or instrumental perspective' (70, p. 95) nor should they adopt a purely instructive or means-based approach to technology (Castellar, 2021). Rather, they should be designed to empower individuals in their particular activities, based on the needs of specific social actors and their distinctive objectives.

Conclusions

Although largely neglected in the digitalisation process until recent years, Latin American populations living in vulnerable conditions have become the object of growing academic interest, especially since the 2019 pandemic. Public educational policies aimed at digital inclusion have also gained attention over time, recognising digitalisation as a complex multidimensional phenomenon, rather than a purely technological one.

The reviewed studies show that digitalisation is no longer considered solely in terms of access, as access alone does not suffice for development. Instead, the capacity for digital appropriation—based on the context (a key mediator, as Quinones et al. (2021) point out), and relative to the function or goods pursued—comes into play. This is especially important for those living in vulnerable conditions, given the potentially transformative power of ICTs. Therefore, access and access points are now aimed at fostering meaningful appropriation, tailored to the different purposes or goods pursued by different individuals and communities. As Pick et al. (2021) conclude in their research, the key point lies in investigating 'the purposeful uses of ICTs' (p. 259) in Latin America. This paper has addressed this by examining the theoretical perspectives on digitalisation in the selected studies: the aims toward which digitalisation is directed, the functions it is understood to perform in everyday life, the factors affecting it and the political views influencing it.

The analysis carried out suggests that the symbolic, social, contextual and communitarian approach to digitalisation identified in many of the articles serves as a strong theoretical foundation for advancing development, understood in human and not just economic terms. However, there are some ambivalences in the studies that have been discussed above. For instance, alongside the positive affirmation of individual and local purposes through ICTs, there is also a (negative) liberation process aimed at removing the barriers that continue to seriously affect the digitalisation of the most vulnerable populations in Latin America. In the same vein, the generally accepted focus on social justice and social inclusion characteristic of the humanistic perspective is sometimes overshadowed by a competitive, market-driven view of ICT typical of Western neoliberal societies. Both academics and practitioners should note these ambivalences and emphasise the need to further strengthen a humanistic understanding of technology. This is

evident in the recommendations for digital policies which (1) move beyond a purely instrumental interpretation of technologies, (2) assign a social role to them, and (3) adapt to different sociocultural contexts, especially where vulnerable populations are concerned. The prominent role of these groups and (4) the objectives or goods they pursue, both in the design and implementation of the programmes, appear to be the only effective way to achieve their empowerment.

These approaches prove to be more suitable for promoting the social advancement of disadvantaged populations through ICT since they encompass a broader understanding of what is at stake (identity recognition, not just capital; internal self-determination, not just external factors; substantive goods, not just procedural rights). They serve as a better framework for promoting human development in a more holistic way. Consequently, the nexus observed by Pradhan et al. (2022) between ICT infrastructure and institutional quality should include the perspectives highlighted in these studies, especially when considering vulnerable contexts in the Latin American region.

This paper has offered an overall view of the Latin American region by examining the scientific articles published on digitalisation and poverty in the last 22 years in it. Theoretical reviews or metatheories contribute to scientific research and policy-making because they draw attention to how theoretical approaches are built, substantiated and justified and enable the identification of ambivalences and conceptual confusion, which could impact methods and decision-making.

However, a significant limitation of this study is that, although it offers a valuable general overview of Latin America, this broad perspective does not capture the unique contexts and specific challenges of individual countries. Additionally, a methodological constraint of this study is that only articles with a focus on education have been considered to limit the scope of the research, but there might be other fields of study that approach the digitalisation of populations in vulnerable conditions in the region, which are also relevant for the understanding of the topic and the theoretical assumptions underpinning digitalisation.

Finally, the cultural perspective of the researchers might influence the interpretation and discussion of the results, as well as the categories identified regarding the theoretical perspectives on digitalisation and the specific digital needs of the culturally diverse populations living in vulnerable conditions in Latin America, given the continent's great cultural diversity.

Future studies should focus on detailed country-specific analyses within Latin America to uncover local nuances and provide tailored insights into the digitalisation of the most disadvantaged in the various kinds of contexts they inhabit. This approach will help to better understand the unique circumstances and challenges faced by individual countries. The overview presented of the theoretical perspectives from which digitalisation is conceived in Latin America in relation to the human development of the most vulnerable can serve as a framework for this purpose.

Data availability

The list of the 87 primary documents used for this theoretical review can be found in Annex 1 and has been uploaded as supplementary material. The database search strings used can be seen in Fig. 1.

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Author contributions

Jesús Plaza de la Hoz: writing original draft, review; Zaida Espinosa Zárate: conceptualisation, writing original draft, review; Celia Camilli Trujillo: methodology, review.

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The authors declare no competing interests.

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Ethical approval was not required as the study did not involve human participants.

Informed consent

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Additional information

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