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# Critical digital literacy as a key for (post)digital citizenship: an international review of teacher competence frameworks

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**Abstract**

The use of information and communication technologies for education is increasingly recognised as essential in a post-pandemic world. In this regard, the ability to effectively engage with technologies for educational purposes is now part of the basic knowledge, skills and attitudes to be expected from anyone in the teaching profession. Accentuated by the proliferation of technology-mediated situations resulting from the Covid-19 pandemic, but linked to a longer-term trend, dealing with the digital is also now an almost unavoidable aspect of active participation in society and civic engagement. Indeed, the notion of 'postdigital' is rapidly gaining traction as a way to highlight that the digital and non-digital cannot be really separated anymore and, due to this fact, (post)digital citizenship is emerging as a core competence for citizens. Still, the way digitally competent educators are expected to support learners in their development as digital citizens is not explored enough. To contribute to closing this gap, this paper reviews 24 teacher competence frameworks from different regions of the world and makes the case for considering educators' critical digital literacy as a key leverage to building digital (post)citizenship and fostering ethical uses of technology. The analysis reveals that critical digital literacy is mostly missing and, hence, the paper closes with a set of recommendations for policymakers and institutional leaders in the education sector on how to incorporate critical aspects of digital literacy in educators' professional development activities, so that teachers and trainers can operate as a much needed vector to develop (post)digital citizenship across our societies.

**KEYWORDS:** Teacher Competence Frameworks, Digital Competence, Teachers, Critical Digital Literacies, Digital Citizenship.

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## 1. Introduction

The mandatory physical distancing, a "requirement for individuals to maintain a safe distance from one another" (QAA, 2020, p. 5), resulting from the Covid-19 pandemic situation suddenly redefined the role and uptake of digital technology as the "the means by which information is conveyed and people are linked together" (Bower, 2019, p. 1036) in education.

In this context, governments and other authorities and key stakeholders all over the world are increasingly recognising the importance of ensuring that educators, working at all levels of education, have the ability to incorporate such technologies into the planning and delivery of educational experiences. An example of this can be seen in the *Digital Education Action Plan 2021-2027: Resetting Education and Training for the Digital Age*:

> *"Experiences from this period show that education and training systems and institutions*

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> *that had previously invested in their digital capacity were better prepared to adapt teaching approaches, keep learners engaged, and continue the education and training process. In particular, the emergency confirmed the need for all educators to be skilled in using digital technologies effectively in their teaching and training process and to ensure that all children can participate in digital education" (European Commission, 2020, p. 3).*

Beyond education, the pandemic has contributed to accelerating or consolidating already established trends around the increasingly central role of Information and Communication Technologies (ICTs) for participation in society, often described as "Digital Citizenship". In this regard, the last edition of *The Digital Competence framework for citizens (DigComp)*, published by the European Commission, offers detailed examples of the knowledge, skills and attitudes that citizens need for engaging in citizenship through digital technologies, that is: "To participate in society through the use of public and private digital services. To seek opportunities for self-empowerment and for participatory citizenship through appropriate digital technologies" (Vuorikari et al., 2022, p. 19).

Teacher Competence Frameworks (TCFs) are policy documents that define the minimum standard of expertise and professional attributes that all the educators teaching within a given educational system are expected to possess, in order to be able to do their jobs properly. Therefore, analysing this type of documents can help us understand how the teaching profession is understood in different societies and the role that ICTs are expected to play in education.

In this paper we look at how TCFs from a variety of contexts address digital teaching competence. Likewise, considering schools play a key role in forming students to actively engage in society and become tomorrow's citizens, we examine whether TCFs address citizenship education and so-called digital citizenship.

Last, but not least, our analysis focuses on elements of criticalness in relation to the digital socio-technical ecosystem. Therefore, we pay particular attention to TCFs that – beyond effectiveness and instrumental aspects – expect educators to engage critically, ethically, and responsibly with ICTs.

## 2. Background: from digital literacy to critical digital citizenship

### 2.1 Adding a critical dimension to the digital literacies debate

In the last couple of decades, the generalised understanding of digital literacy has transformed considerably: from the capacity of using ICTs as mere tools to a more complex and socio-culturally sensitive concept associated with the adoption of digital practices and digitally mediated interactions with human and non-human actors. If we look at the European Union again as an example, this shift is rather clear: while in the 90s to be digitally literate meant to comply with the so-called European Computer Driving Licence (ECDL), which basically meant being able to use digital productivity tools such as word processors or spreadsheets, current interpretations of the concept as a key competence for lifelong learning see it as:

> *"the confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society. It includes information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), safety (including digital well-being and competences related to cybersecurity), intellectual property related questions, problem solving and critical thinking" (European Commission, 2019, p. 10).*

Building on that definition, the latest version of DigComp (Vuorikari et al., 2022, p. 2) stresses the importance of digital competence in collaborating with others to make sense of existing content (e.g. information, data, narratives) and to produce new knowledge while being aware of the constraints and affordances of the specific social-cultural-political context where one acts (Lankshear & Knobel, 2003; Marín & Castañeda, 2022).

A while ago researchers also started to argue for the use of the term 'literacies', in plural, as a way of emphasizing the existence of multiple forms of literacy connected to multiple communities and domains, or multiliteracies (Barton et al., 1999). At the beginning of the century, the typical differentiation was between *instrumental* digital competences, which are the basic technical and operational know-how in relation to the use of technological devices, and *strategic* digital competences, which relate to a cognitive rather than technical dimension, referring to the ability to use the information proactively to affect one's professional and/or personal environment (see, for example, Steyaert, 2002). More recent classifications tend to embrace other components: for example, Ferrari et al. (2012) consider digital competence as a combination of information skills, communication skills, content creation skills, safety skills, and problem-solving skills, while Deursen et al. (2014) distinguish five different types of internet skills relevant to a large segment of the population: operational, formal, information, communication, and content creation.

Undeniably, the debate is going beyond instrumental aspects concerning the use of ICTs and starts to pay some level of attention to the social, cultural, political, economic, and ethical implications of technology. In line with this understanding, several recent digital competences frameworks highlight the importance of developing a 'critical' perspective in relation to digital

technologies. For instance, the already mentioned DigComp framework defines digital competence as not only confident but also critical use of ICTs for participation in a number of areas of life in contemporary society, for example by critically evaluating the credibility and reliability of sources of data and information or by being critically aware of the risks posed by exclusively relying on digital technologies (Vuorikari et al., 2022). Likewise, the UNESCO's Broadband Commission for Sustainable Development highlights the importance of critical digital literacy and defines it as a "set of specific understandings and a disposition towards the politics of the digital society and digital economy" (2017, p. 32).

Adopting a critical perspective in relation to digital literacy can be understood in different ways, depending on the perspective we start from. For example, scholars and practitioners from the field of Information and Media Literacy, consider the critical dimension as the one that is needed to "assure the validity of processes such as triangulating information and checking sources are appropriate" (Leaning, 2019, p. 10). Likewise, Media Education, as a field of both research and practice, has long been concerned with the competences to assess the credibility of content and to differentiate misinformation from reliable messages (Leaning, 2019).

Regardless of the starting point or the academic discipline, adding the word 'critical' before the term 'digital literacies' implies bringing ethical implications and power dynamics to the fore, while connecting with different traditions in the fields of literacy, media education and information literacy (Pangrazio, 2016). It not only entails adopting a critical position when consuming and sharing content, including dealing with data, but also having at least a certain level of awareness of who controls ICT infrastructures and the vested interests of different stakeholders. In this regard, approaching the current media landscape from a critical perspective implies at least a basic understanding – and making informed decisions accordingly – of the 'political economy' of informational capitalism, the pervasiveness of datafication in contemporary society and its social, political, legal, and ethical implications, (Cohen, 2019; Cukier & Mayer-Schoenberger, 2014; O'Neil, 2016), including how algorithms may promote biased views of the world, for instance reinforcing racism (Noble, 2018). At the same time, the ability to critically evaluate content and spot misinformation – a traditional concern of media and information literacy – remains as relevant as ever at a time when the reach of so-called fake news is amplified by both human and non-human (i.e. bots) actors. The networked and, at the same time, uneven configuration of the current media environment along with the increasing datafication of life makes it essential for everyone to develop at least a basic understanding of how most online platforms and digital services operate (Nguyen, 2021).

Critical digital literacy is essential to anyone living in contemporary societies, but even more to teachers considering they are uniquely positioned to empower younger generations to engage not only effectively but also ethically and responsibly with the current socio-technical ecosystem (Gouseti et al., 2021; Marín et al., 2021). Moving beyond prescriptive and normative views, it is essential to favour dialogue and questioning instead (Buckingham, 2018). For this shift to become mainstream, however, education systems as a whole need to be invested in approaching digital competences from a critical perspective, starting from the training of teachers themselves, and with the frameworks regulating both pedagogies and curricula. Finally, investing on teachers as enablers of critical digital literacies development would contribute to avoiding the too often predominant instrumentalist association of ICTs with performance and efficiencies (Raffaghelli & Stewart, 2020), which connects digital literacy to labour market workforce demands rather than to the challenges of living in digital societies (Alexander et al., 2017).

### 2.2 Education and digital citizenship

Digital citizenship can be interpreted in two different ways, as the concept may refer to:

> *"being a citizen of the digital, as if government portals, social network platforms and online shopping were in themselves their own kind of states or empires in which its citizens had several roles, functions and so forth. At the same time, it can also refer to the ways that classic traditional models of citizenship (of a nation state) now can involve citizen actions through new and changing voting systems and civic forums" (Pangrazio & Sefton-Green, 2021, p. 17).*

Whether we put emphasis on the former or the latter, education can be expected to play a central role in helping individuals to develop the attributes they need to navigate both dimensions. In this regard, educational systems across the globe are actively aiming at introducing into the curriculum the development of digital citizenship; see for instance Couros and Hidelbrandt (2015) or NetSafe (2018) as examples from Canada or New Zealand respectively.

A concept analysis on digital citizenship and related terms (i.e. online citizenship, cyber citizenship, e-citizenship, networked citizenship, technological citizenship, and Internet citizenship) conducted by Choi (2016) revealed four key categories that include different kinds of competence:

1. making a responsible and ethical use of the Internet
2. accessing and creating content, as well as successfully communicating with others, as covered by media and information literacy
3. participating in existing social structures in relation to political, economic, and cultural aspects of life

4. critically challenging existing power structures to pursue social justice

Digital literacies are necessary for individuals to perform digital acts, and that it is through digital acts that digital citizens come into being (Isin & Ruppert, 2015). Digital acts entail interpreting multiple streams of information, anticipating unknown consequences of digitally driven processes, creating new spaces for political engagement. The implications of all these acts for citizenship is complex, and the increasing reliance on closed algorithmic decision-making is questioning what it means to be an engaged and active citizen.

The inclusion of critical components within digital literacy frameworks is helping to move the discussion away from the operational nature of digital skills towards critical understanding of what it means to be a digital citizen today. For this to happen beyond the academic debate, education systems need to be equipped with educators able to instil, leading by example, these critical literacies into their students, which in turn requires Teacher Education policy to explicitly address digital citizenship. For instance, by making sure that Teacher Education degrees "clearly highlight democratic work and digital technologies as connected" (Örtegren, 2022, p. 19).

The present article, moving from the above discussion, explores the state of the art in terms of the inclusion of critical digital competences and digital citizenship in TCFs. It outlines the current profile (or lack thereof) of the digital teacher and discusses what further shifts need to happen in the form of recommendations for policymakers and institutional leaders in the field of education. For the purposes of this paper, we focus on teachers defined as those professionally employed to teach in a formal education context, particularly in compulsory education.

### 2.3 Embedding the digital into Teachers' Competence Frameworks

With education being usually heavily regulated by the state, and teaching qualifications being necessary to enter the teaching profession (Musset, 2010), teaching practices are pervasively marked by a tension between the professional autonomy required to meaningfully engage with the diversity of contexts and students, and the top-down standardisation required to organise, operationalise and make inter-operable curricula and pedagogies at the national and international level (Torrance & Forde, 2017).

TCFs have played an instrumental role in the implementation of professional standards in teaching, a movement initiated in the United States in the 20th Century (Davies, 1962) that gradually permeated other educational systems and traditions. Indeed, in later years the push towards standardisation has become more and more prominent through the influence of both national governments seeking to enhance the educational outcomes and transnational organisations such as OECD (Landri, 2016; 2022): this has often led to national level TCFs detailing what is expected from teachers. The proliferation of TCFs has taken place in the context of institutional discourses and policymaking that aim to reshape education in relation to the so-called knowledge society and life-long, lifewide learning (Caena, 2014). In the case of the European Union, many member states have created TCFs, which are broadly aligned with the *Key Competences for Lifelong Learning* European Reference Framework (European Union, 2019).

In addition to generic TCFs, there are also some frameworks specifically created with the aim of offering a detailed view of the digital competences expected from educators and the role they can play in supporting students' digital literacy development. This kind of TCFs, that in a number of cases are promoted at the national level, often takes the form of non-binding documents proposed as guidance by transnational organisations, such as UNESCO or the European Commission.

The UNESCO *ICT Competency Framework for Teachers* (UNESCO, 2018), firstly created in 2011, has become a worldwide referent for teacher digital competences, influencing national and regional frameworks. It includes three levels (knowledge acquisition, knowledge deepening and knowledge creation) and six elements of teacher digital competence: understanding ICT in education, curriculum and assessment, pedagogy, application of digital skills, organisation and administration, and teacher professional learning, with several examples of implementation. In addition to this, UNESCO has also produced a *Media and Information Literacy Curriculum for Teachers* that identifies a set of core competencies consisting of six skills areas for media- and information-literate teachers (UNESCO, 2011).

Another influential example is *the European framework for the digital competence of educators* (Redecker & Punie, 2017), known as DigCompEdu, which was developed by the Joint Research Centre of the European Commission following an extensive consultation with experts and stakeholders (Pujol Priego & Kluzer, 2018). DigCompEdu calls for a rather holistic understanding of digital literacy and addresses the digital competences of 21st century educators, together with their professional engagement's activities and the impact that teachers can have on their learner's digital literacy (Nascimbeni 2018). This framework does indeed advocate for a change in the role of teachers, by introducing meta-cognitive and self-development teachers' competences, getting them ready for open and networked learning settings (Loeckx, 2016), but still does not fully address the lack of contextualisation and criticality. DigCompEdu has been able to inspire national interventions in various countries (Caena & Redecker, 2019), such as the *Marco de referencia de la Competencia Digital Docente* in Spain (INTEF, 2017).

Having appropriate digital competence frameworks for teachers is a prerequisite for educational institutions to become engines to develop critical digital literacies of

students (Littlejohn et al., 2012), possibly extending digital literacies across different contexts, making sure that the critical, ethical, and technical level can interplay as an evolving set of competences (ibid.). If traditionally schools are assigned the mission to foster the development of responsible and active citizens, when it comes to digital societies they should become the place where individuals learn how to behave in our platform-based and datafied societies, in other words, the place where digital citizenship is fostered. However, for this to happen it is essential that digital citizenship is explicitly included into teacher education (Örtegren, 2022).

## 3. Method

This review is guided by three main research questions:

1. To what extent is (critical) digital competence present in TCFs?
2. To what extent is (digital) citizenship present in TCFs?
3. Where present, are (critical) digital literacy and (digital) citizenship explicitly connected to each other in the context of the TCFs?

Our aim was to examine the presence of critical digital literacy and digital citizenship as relevant dimensions in general TCFs – or similar documents outlining standards for the teaching profession, as the goal of these documents is to shape the qualifications that give access to the teaching profession as well as professional devolvement opportunities available to in-service teachers.

Seeking to explore whether regulatory frameworks internationally provide the tools to deal with the critical issues outlined above, we have conducted a review of TCFs and teachers' professional standards by means of a purposive sample aimed at covering all continents and different scopes (i.e. supranational, country and regional). A fully comprehensive review is beyond the scope of this paper, and the collection of documents surveyed is both heterogeneous and has substantial geo-political gaps (due to either lack of documentation, access to it or linguistic barriers). Still, the review constitutes a revealing exercise to identify high-level trends and (mis)alignments in global policy as pertaining to expectations towards teachers' ability to use ICTs for teaching and learning purposes and their role in supporting students to develop the competence required to become future digital citizens. Given our purpose, we focus on their criticality (and relevant gaps thereof) in relation to the uses of digital technology in education.

We categorised each of the TCFs included in the review by answering the following questions:

- Which organisations are behind the TCF?
- How is authorship credited?: individual authors named vs. only institutional author
- When was the first version released? What is the date of the most recent update?
- What are the educational levels it covers?: Early years (kindergarten), Primary Education, Secondary Education, All levels
- What is its geographical scope?: Supranational (i.e. covering more than one country), National (i.e. operating at country-level) or Regional (i.e. established by authorities in jurisdictions within countries)
- What are the countries covered by the TCF? What is the specific territory or jurisdiction (e.g. district, state), if any, within a larger country covered by this TCF?
- In which continent(s) are the countries covered by this TCF?
- In what language(s) is this TCF available?
- How many publications, if any, are included in the list of references of this TCF?: None, Less than 5, More than 5

Likewise, we used Computer-Assisted Qualitative Analysis Software to code the documents, looking at the following themes:

- Digital competence (including also equivalent terms such as ICTs and educational technologies).
- (Digital) Citizenship
- Criticalness

Therefore, apart from examining the presence of these three dimensions within each of the TFCs, the analysis also looks at the intersection of digital with both citizenship elements and criticality.

## 4. Results

The sample included 24 TCFs purposely selected with the aim of ensuring diversity of scopes, scale and coverage by spanning across five continents and all levels of compulsory education (see Figure 1). For a complete overview of the analysis of the TCFs, see Appendix 1.

TCFs tend to be created by authorities that shape the teaching profession across entire countries (e.g. Myanmar) or within specific regions of a given country (e.g. provinces in Canada), usually covering all levels of compulsory education. However, our sample also included international TCFs designed by organisations such as UNESCO or the Commonwealth, as well as some cases aimed at just specific levels (e.g. primary education or early childhood education). English is the most used language among those TCFs, although some have been published as multilingual documents with the content also available in the languages spoken in the target territory (e.g. French in Québec, Chinese in Hong Kong or Burmese in Myanmar).

Although only nine of the reviewed TCFs (37.5%) mention the word 'digital', overall almost all of them (n=22, 91.7%) include the use of technology in

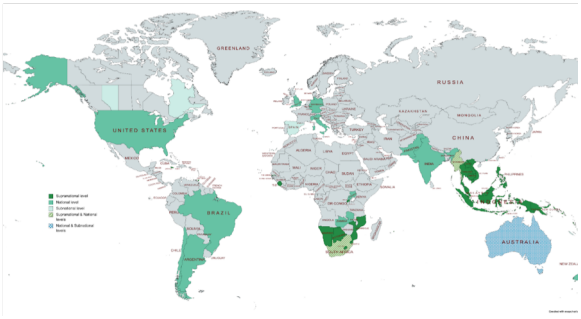


**Figure 1** - Location and scope of the sample of TCFs analysed in this study. Map created by the authors with mapchart.net and available in high resolution from Zenodo https://zenodo.org/record/6628521

education by means of closely related terms, primarily 'Information and Communication Technology'. Expertise in the use of ICTs, for both general and educational purposes, tends to be a common requirement for teachers within these frameworks. For instance, in the case of South Africa, legislation establishes that "Newly qualified teachers must have highly developed literacy, numeracy and Information Technology (IT) skills" (Government of South Africa, 2011, p. 56) and also that "the utilisation of ICTs for innovative teaching and enhanced learning" (ibid., p.12) must be addressed as part of the fundamental learning underpinning the acquisition, integration and application of knowledge for teaching purposes.

Some of these frameworks include elements that relate to different dimensions of teaching as a professional domain while detailing various levels of expertise. In this regard, the Pan-Commonwealth TCF addresses the use of educational technology as part of the 'Professional Knowledge' that all teachers need to acquire at pre-service stage, as well as part of the collaborative work they are expected to do in-service with the aim of fostering conducive learning environments (see Table 1).

Likewise, Myanmar's TCF includes a competence standard devoted to educational technologies, according to which educators across all levels (early years, primary and secondary education) are required to be able to "Demonstrate understanding of appropriate use of Information and Communication Technology (ICT) in teaching and learning" (Government of Myanmar, n.d., p. 30). More specifically, it contains three indicators relating to the ability to a) describe the function and purpose of educational tools and materials to support the teaching and learning, b) evaluate and match available tools and materials to curriculum content and pedagogical strategies, and c) describe and demonstrate the understanding of basic concepts and principles of media and information literacy.

Overall, TCFs approach digital technologies as something that enhances learning and, therefore, require educators to know how to make use of them as part of their professional practice. The overall optimistic view on the potential of technology prevailing in TCFs is exemplified by the following statement from Hong Kong's TCF: "They [teachers] subscribe to the use of cutting-edge technology to help students employ different learning modes that take advantage of digital transformation." (Government of Hong Kong, 2015, p. 8). While over half of the frameworks (n=13, 54.2%) somehow include elements of criticalness, mainly expressed in terms of critical thinking, only a handful (n=6, 25%) do so – at least explicitly – in relation to ICTs, by introducing competencies that can be regarded as manifestations of critical digital literacy. For example, critical engagement with ICTs is referred in the

| Category of professional standard | Standards | Initial | Proficient |
|---|---|---|---|
| Professional knowledge | Knowledge of ICT including a wide range of new technologies (PK11) | Demonstrates an understanding of technological concepts and effectively utilises technologies to support teaching | Demonstrates an understanding of technological concepts and effectively utilises a range of technologies to support teaching knowledge of selecting appropriate curriculum materials and integrate them into lesson planning and implementation |
| Professional leadership, community and relationships | Create conducive learning environment through the incorporation of new technologies (PLCR8) | Utilises new technologies in lessons; works with colleagues to implement new technologies | Identifies and utilises new technologies in lessons; works with colleagues, communities and stakeholders to implement new technologies |

**Table 1** - Elements related to ICTs in The Commonwealth's *Standards Framework for Teachers and School Leaders* (Gallie & Keevy, 2014).

| Countries, regions | Mention |
|---|---|
| United States | "As participants of a larger world, the students of accomplished teachers recognize the effect that their actions have outside the classroom. They therefore develop civic responsibility and digital citizenship, becoming aware of how their actions affect others." (National Board for Professional Teaching Standards, 2016, p. 16) |
| Chile | "[educators] provide opportunities aimed at supporting students in the development of abilities that are needed in order to become digital citizens capable of solving relating to information, communication and knowledge, as well as legal, social and ethical dilemmas in a virtual environment" (Government of Chile, 2021, p. 41, authors' translation) |
| Quebec, Canada | "the use of digital technologies, with all the benefits it has to offer, also creates challenges and has made inroads in the education world, thus confronting teachers with phenomena relating to citizenship in the digital age." (Quebec Ministry of Education, 2021, p. 17) |

**Table 2** - Mentions of "digital citizenship" in the TCFs analysed.

United States' framework, as it indicates that "accomplished teachers position themselves as critical users of technology, ensuring that it is employed to enhance student understanding" (National Board for Professional Teaching Standards, 2016, p. 23) or in the case of Argentina's framework, which stresses the importance of critical and creative appropriation of digital resources (Government of Argentina, 2018, p. 6).

Interestingly enough, India's framework is one of the very few cases raising concerns about the hype and naivety that too often surrounds policy making in relation to educational uses of technology (Facer & Selwyn, 2021), calling for a critical engagement with ICTs:

> *"With the onset and proliferation of Information and Communication Technology (ICT), there is a growing demand that it be included in school education. It has become more of a fashion statement to have computers or multimedia in schools, the result being that in spite of its potential to make learning liberating, its implementation is often not more than cosmetic. It is also often touted as a panacea for shortage of teachers. These are detrimental to the learning of the child. Teacher education needs to orient and sensitize the teacher to distinguish between critically useful, developmentally appropriate and the detrimental use of ICT. In a way, ICT can be imaginatively drawn upon for professional development and academic support of the pre-service and in-service teachers." (Government of India, 2009, p. 14)*

Despite the key role of teachers in shaping the future societies, as they are responsible for educating tomorrow's citizens, the terms 'citizenship' or 'citizens' are only mentioned in 10 out of the 25 frameworks (40%). For example, in Kenya's framework it is part of the professional values and behaviour standard for teachers, referring to the teachers' mode of conduct, ethics, high standards of commitment towards their professional role and promotion of good citizenship. Beyond citizenship in relation to particular countries or societies, the idea of learning to live in globalised and multicultural societies is also present in some frameworks. In this regard, Myanmar's framework requires from teachers, as a minimum requirement, the ability to build students' understanding of different cultures and global citizenship, while Hong Kong's envisions teachers as global citizens who "enhance their knowledge of current issues in the local, national and global scene and relate their teaching and guidance to these issues" (Government of Hong Kong, 2015, p. 6).

Only three of those frameworks in the study that addressed civic education consider its intersection with technology, as expressed by the term 'digital citizenship'. That means that just 12.5% of all the reviewed frameworks pay attention to such an important issue (see Table 2 above).

The regional TCF of Quebec, Canada, somehow adds a critical dimension to the notion of digital citizenship by referring to the key elements of the *Digital Competency Framework* of the Quebec Ministry of Education (2019), which stresses the importance of exercising ethical citizenship in the digital age.

TCFs are normative documents, in many cases with policy status, that set a vision for the professional attributes expected from all educators within the educational systems of a given territory. Looking at the way TCFs relate to the literature can help us gain insight into the grounding of those visions and the extent to which they are informed by research. In total, 13 of the analysed TCFs include a list of references (54.2%). While only some refer to relevant legislation, like South Africa's TCF, others draw heavily from the academic literature. The Chilean TCF is by far the TFC in our sample with the longest list of references, with 165 documents including both policy documents and an extensive set of academic works. Besides this outlier, most of those TFCs cite less than 20 documents.

## 5. Discussion and Conclusions

Overall, the analysed TCFs lack a critical contextualisation of the role of technology in teaching and learning, not only in terms of the above-mentioned political economy, but also within local pedagogical cultures and needs, often simply linking back to the aforementioned transnational organisation mandates (e.g. frequent references to OECD guidelines). The articulation of digital competences included in these documents appears to be framed mainly in terms of instrumental use, coherently with the hegemony of human capital theory in educational policy (Marginson, 2019). Therefore, while it broadly argues for a critical and risk-aware use of technology, it does not further elaborate on what critical and risk-aware mean in this context, nor provides a more specifical framing of criticality in digital contexts in terms of political-economic contextualisation, as discussed in the introductory section.

One aspect that seems to be particularly lacking across all these frameworks is therefore that of critical digital competences. None of the above-mentioned frameworks demonstrates an articulated critical perspective, or even a general awareness of the political economy of digital technology, be it with specific regards to teaching, or more generally with regards to contemporary societies. A recent initiative looks promising in this sense, the Critical Digital Literacies framework for educators derived from the Erasmus+ project "Developing Teachers' Critical Digital Literacies" (Gouseti et al., 2021).

Though, as we have seen above, TCFs provide a meaningful degree of guidance in structuring the teachers' role in formal learning contexts, part of the introductory argument of this paper is that the inclusion of digital technologies in teaching spaces and practices has blurred the boundaries of formal and informal to the point where competencies and pedagogies developed for the first domain are not necessarily sufficient for the newly emerging hybrid environment. Informal learning, defined by Livingstone (2006) as "any activity involving the pursuit of understanding, knowledge, or skill that occurs without the presence of externally imposed curricular criteria" (p. 206), can be triggered by work requirements or social interactions and involve support and motivation from others. Also, it can be useful to consider the intersections of informal learning and self-directed learning, where "self-directed informal learning per se is most simply understood as learning that is undertaken in the learner's or learners' own terms without either prescribed curricular requirements or a designated instructor" (Livingstone, 2006, p. 205).

Most of these competence areas are normally not integrated within existing TCFs such as those reviewed above, as they do not necessarily outline specific areas of knowledge nor skills in terms of measurable and outcome-oriented behaviour, but instead lean heavily towards critical values and attitudes towards the current media ecology, inclusive of its political economy, which are contextualised and therefore harder to operationalise and standardise - going against the grain of current trends in educational policy making (Landri, 2022). The challenge is therefore that of moving away from pre-determined competence frameworks and towards broader and more inclusive concepts of digital literacy and digital fluency, while also preserving the focus, scaffolding and institutional interoperability that comes from structured approaches (Marín & Castañeda, 2022).

This is not to say that all teachers should become experts in those six dimensions of critical digital teaching competence: that should not be the responsibility of any individual educational professional, and indeed overreliance on individualised expertise is a problematic aspect shared by all the above discussed frameworks. What we argue for is rather a framing of teachers as professionals, and citizens, who are critically aware of the socio-technical ecosystems where they work and live, recognising the importance of these six aspects to live in contemporary societies. Likewise, we advocate for TCFs that go beyond individual qualities and professional attributes to promote the integration of teachers into broader informal, inclusive and responsive communities they can refer to when in need to address specific issues and contexts. This approach is explicitly political, and echoes Lankshear and Knobel (2003) and Burnett's (2010) claims about the situatedness of literacy in its broader sociocultural and political contexts as an essential prerequisite to move beyond simple skills: to achieve a full connection beyond competencies and criticality teachers and students will have to actively engage in socio-culturally informed production of digital artefacts, and not merely replicate the status quo by consuming and integrating them.

Beyond education and professional practices, the digital is now an essential aspect of active participation in society and citizenship in the broadest possible sense of the term. However, while this has been accentuated by the proliferation of technology-mediated situations resulting from the pandemic, it is important to acknowledge that these dynamics are linked to longer-term trends. The idea of the 'postdigital' has gained traction over the last few years as a way of highlighting that digital technology is enmeshed in the fabric of society and everyday life to such an extent that it does not make sense to treat it as a meaningful category to label specific things or practices that are separate from the rest (Taffel, 2016).

Therefore, we argue that it would be more accurate to talk about postdigital citizenship, as the digital increasingly mediates key practices and behaviours that underpin civic participation in contemporary societies, even though neither access nor competence are evenly distributed. However, the way digitally competent educators are expected to support learners in their development as (post)digital citizens is not explored with enough attention in the literature (Örtegren, 2022) and it is virtually absent from TCFs.

Ortegren (ibid.) and Jandric et al. (2018) argue that the embeddedness and pervasiveness of digital technologies has an impact on the increasingly blurred boundaries between the different types of networks (technological, relational, social, political) citizens participate in. In particular, they problematise previously assumed boundaries – between the 'real' or the 'natural' and the 'digital' or 'technological' – as increasingly less useful analytical criteria when attending to current conceptualisations of citizenship. The postdigital perspective, acknowledging and articulating this blurring, provides useful conceptual tools to navigate it critically. In this regard, critical digital literacies become the foundation for what we call (post)digital citizenship.

Following an introductory discussion of the ongoing global shifts in the digital landscape, and particularly the relevance of the shift towards postdigital understandings, this article has focused on how these changes are shaping education policy across the world, with a focus on their influence (or lack thereof) in re-defining the teaching profession.

With the aim of analysing TCFs to find out embedded critical digital literacies for teachers, this study reviewed 24 documents from around the globe. The results showed that critical digital literacies for teachers are still an unresolved issue across the world and calls for action to consider these literacies in their place, considering the situatedness of literacy.

As limitations, the authors acknowledge two central aspects. First, the study relies entirely on the analysis of policy documentation, in isolation from local histories, political landscapes, socio-economic considerations and pedagogical cultures. This limits us to taking the documentation at face value, foreclosing interpretive approaches, and missing the richness and pluralism of pedagogical praxis as developed in offline, online and hybrid classrooms across the world.

Second, the study relied on purposive sampling and was strongly bounded by accessibility and linguistic barriers (the authors can understand 6 languages to the level required for the analysis), inherently limiting the scope of the survey, which has very noticeable gaps in Eastern Europe, the Middle East and Asia.

Future work will consider addressing the above limitations, by triangulating documentary analysis data with primary research (e.g. interviews/questionnaires with policymakers and key staff from Ministries of Education, with teacher educators in teacher training programmes), so as to achieve a more comprehensive and detailed mapping not only of the philosophies and decisions behind teacher competencies, but of their implications for what happens in teacher training and school classrooms. The aim will be to generate impact on two main levels: a) target the classroom and/or institutional level, establishing what practical strategies and interventions might be deployed to promote a more active, cross-disciplinary and critical engagement with digital technologies (e.g. workshops and hackathons), and b) target the national/regional policy level and develop more detailed and focused policy briefs and white papers to further highlight problematic gaps in existing legislation and frameworks, and propose ways to address them accordingly.

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