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Arctic teacher education and educator training: a postcolonial review of online approaches and practices

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Arctic teacher education and educator training: a postcolonial review of online approaches and practices

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Abstract

Digitalisation, and expanding digital infrastructure has given rise to new pedagogical approaches and practises that involve making use of the internet. In the development of this literature-based article, we examined Arctic online education from a holistic perspective, adopting broad definitions of online learning environments and teacher education. The aim of this paper is to map and analyse the state of knowledge regarding the digital transformations of practices and conceptualisations in teacher education and educator training in the Arctic, as we sought to answer the following research question: What is *Arctic* in online teaching and learning in teacher education and educator training? Our methodology consisted of a scoping review of peer-reviewed papers published between 2003-2023. Through a qualitative content analysis, we explored definitions, perspectives and positions that emanated from the literature. Viewed through the lens of postcolonial theory, our findings and discussion surface important points of 'difference' (Verran, 2013) between Indigenous pedagogies, which are a central part of the *Arctic-ness*, and technological advances that enable online and distance learning, namely: Rootedness And Fluidity; Continuity of the Story And Fragmentation; Preservation And Transformation; Traditional Seeing And (Western) Frameworks, which we argue should be a key feature of conversations within this field.

Keywords: Arctic pedagogy, Indigenous education, digitalisation, teacher education, educator training, postcolonial critique

Introduction

Over the past 5 years there has been an explosion of online, blended, and hybrid teacher education development in response both to the pandemic but also student needs and increasing access within rural and remote communities. Paralleling this growth in online teacher education and educator training, an international examination of Indigenous-Settler reconciliation and revisioning of the colonial structures, values within teacher education has emerged (Snow, 2020; 2016a; Vininsky and Saxe, 2016). Reflecting on the pre-pandemic beginnings of this project, we witnessed a period of exponential growth in the literature, as educational offerings shifted from emergency response, to the new normal of online education and rebounding in the face of global teacher shortages post-pandemic. In the change and evolution of teacher education and educator training, paired with standardisation and certification processes, what remains truly *Arctic* online? In responding to this question, we did not seek to compare and contrast Arctic and non-Arctic pedagogies, instead we sought to surface the hidden voices, perspectives and pedagogies marginalised by colonial education systems. This approach allowed us to critically examine what we have learned from this experience and to allow us to grow and improve teacher education and educator training, particularly within Indigenous, rural and remote communities.

Though a large volume of new literature has been produced, there has yet to be a systematic review focusing on Arctic pedagogy in relation to online teacher education and educator training. Recent systematic reviews have occurred to examine online and blended learning in teacher education, as well as response to teacher education to Covid-19 and also Indigenous teacher education, however the gap exists when the intersection of all of these is considered. The systematic review we conducted allowed us to address the new proliferation of research and offer sense-making not only for ourselves, but a synthesis that could provide researchers, teacher educators and policy makers with evidence-based practices to improve teacher education and educator training. Through the process of this research we (non-Indigenous and Indigenous researchers from four different countries) grappled with terms and boundaries in our own preconceptions of *Arctic*, *Indigenous*, *teacher education* and *educator training*. Therefore, we have outlined an extended methodology section, which details the evolution of the inclusion criteria, serves to illustrate our approach to locating literature and allows others to evaluate the process which we came to view with more complexity the longer we worked. Understanding these boundaries became fundamental not only to answering, but understanding our research question: What is *Arctic*, when it comes to online teaching and learning in teacher education and educator training? Within the question we established specific objectives to enable us to further refine and map the boundaries of the review:

- map the key themes within published literature on Indigenous and Arctic pedagogies of online teacher education and educator training from a postcolonial perspective;
- prompt discussions for future research and practice.

To contextualise the research, we began with an examination of the context of the Arctic, and established a postcolonial theoretical framework, seated in postmodernism. From there we gathered 238 papers refined to a collection of 62 which met our most restrictive inclusion criteria, and analysed

these thematically, resulting in four significant themes which we discuss below. Finally, we conclude, not with recommendations, but further questions, which we posit designers of teacher education and educator training could consider in their own work.

Arctic context

Indigenous peoples of the Arctic encompass diverse cultures, that are unified by resilience and ability to thrive in some of the harshest and most sparsely populated environments on the planet, including in (parts of): Alaska, Canada, Finland, Greenland, Iceland, Norway, Russia, Sweden (as they are now known in contemporary, anglophonic terms). It then follows that when the terms Arctic or Indigenous are used in this paper, they are not used to represent a singular geographic location, nor homogenous ways of being, doing, and knowing. Massey (1994), who challenges normative views of place as a physical environment, presents the idea of place as a network of social relations in constant flux. It is this state of flux that both students and their teachers find themselves confronted with daily. This definition of place allowed us to conceptualise *Arctic-ness* in relation to social relations, rather than physical geographies. We therefore use the terms Arctic and Indigenous to represent commonalities across diverse communities, places, customs, lands, and people.

Like their southern counterparts, Arctic Indigenous peoples have experienced colonial disruption and increasing immigration and multicultural influence (Graeske, 2003; Eriksson, 2010). Since the beginning of the 20th century, colonial expectations of education have been implemented across the Arctic, modified, or perhaps mitigated, by remote isolated communities, extreme climate, and seasonal lifestyle patterns. Culture was fundamentally disrupted through religious based education, residential schooling and dominant paradigms of normalising a Sept-June, 9–3 school day, conducted in classrooms disconnected from Indigenous values and relationships to land and one another (Corneau, 2018). However, pathways of resistance and culturally relevant education surfaced through this period also as Arctic Indigenous peoples asserted their identity and way of life (Wildcat et al., 2014).

Indigenous youth identify tensions in their education and identity, with both the need to be conversant in the *modern* world surrounding them as well as hold fast to the traditions and languages of their ancestors. Bauman (2009) described this as a challenge of societal liquidity, one in which the rate of change, external pressures, and degrading social relations create a space of uncertainty and insecurity for those experiencing it. Prior to colonial influence, Indigenous knowledge and economies were based upon the land and cycles dictated by seasons of life and stewardship of relationships with both the living and non-living world (Obed, 2017). It was an education of the specific, tied to place, the people, micro-climates, and abundance provided by nature. However, modernity involves globalisation, amalgamations of places and spaces (Massey, 1994).

Teacher education and educator training in the Arctic region must then respond to the needs of youth and society, with demands that at times feel insurmountable due to their conflicting values: to prepare youth for postsecondary education while concurrently supporting traditional economies. Additionally, formalised teacher education faces unique structural challenges, a small potential student population dispersed over vast geographic areas. As technology, including modes and means of travel, and

communication infrastructure have improved, so too have new modes of learning and knowledge generation which tend to cut across the traditional borders of formal education, creating greater space for discussions of modes and forms of communication in education (Koole and wâsakâyâsiw Lewis, 2018; Wong and Looi, 2011).

Since the turn of the 21st century, there has been a substantial shift in education toward distance education and virtual learning environments, online and blended forms of learning, and digital teaching practices. This ongoing digital shift concerns a plethora of educational dimensions, and research has pointed out the promising possibilities of technologically enhanced and transformed teaching and learning (Collins and Halverson, 2010; Dede, 2007; Fischer et al., 2020; Wood and Shirazi, 2020). Thus, the increasing prevalence of online teaching and learning challenges the conceptions about contemporary education, its prerequisites, qualities, and meanings. Online distance learning has been practiced, developed, and researched in higher education, for example in teacher education, for a considerable time (Vininsky and Saxe, 2016). However, it is reasonable to assume that the rapid digital transition in education, following in the wake of the Covid-19 pandemic (Bergdahl and Nouri, 2020; Fischer et al., 2020), will leave a lasting and an even more profound impression on teaching and learning. This impression can be assumed to be particularly noticeable in the Arctic region, where digital technology can bridge distances and declining numbers of participants and size of educational groups.

Theoretical framework

For the purpose of this paper, we have adopted a theoretical frame inspired by Gayatri Spivak (1993), contextualised by decolonization conceptions from Indigenous scholars. Generally, postcolonial theory formulates its critique around the social histories, cultural differences and political discrimination that are practised and normalised by colonial organisational and power structures within society. Spivak's work rejects the idea that we can recover and return to an ideal precolonial past, but rather we must first become aware and acknowledge the impact of colonial ideals, as well as the struggles which are involved, towards a growing awareness of cultural hybridity. Spivak describing her own experience with origins from India, and living and working in the US, outlines the process of 'worlding' in which the local population is *persuaded* to accept the colonial vision of reality and understanding of the world.

Postcolonial theory has been critiqued because of its nebulous boundaries which can never be entirely free of historical colonial impacts present in current power structures (Young, 2001). However, postcolonial discourse acknowledges and problematizes the challenges of seeing beyond accepted cultural boundaries and norms. It facilitates the reclamation of space and political sovereignty that is free of previous conceptions. Marie Battiste describes this same process with specific reference to decolonizing education; first through acknowledgement of our individual and collective roles in assimilation, and next to build upon relationality, of not just people, but also land and the creatures found within it. It is then towards this reconciliation that postcolonialism can begin, as she states "part of the ultimate struggle is a regeneration of new relationships among and between knowledge systems, which needs scholars competent in both knowledge systems to converge and reconcile these and other knowledges, ways of knowing, and systems" (Battiste, 2005, p.103).

The challenging task of conducting analytical thematisation in a postcolonial manner involves, as Hall (2019) puts it, creating a 'decolonising knowledge space' (p.87). This space is outlined by Verran (2013) who emphasises an openness to a certain form of difference, that does not reside in a socially constructed sameness: "Difference in this usage is not difference allowed by a common sameness, but rather difference before coming to concepts" (p.144). This conceptualisation of difference involves valuing differences and working to resist the colonial urge to reduce differences to 'shared categories' (ibid).

Thus, it follows that opposing reductionist and dichotomised paradigmatic thinking that categorises, that separate the world into local/global, citizen/foreigner, civilized/uncivilized etc., (Chow, 1993; Fogarty, Lovell and Dodson, 2015) is an important part of postcolonial work. Rose (2004) emphasises how this "matrix of hierarchical oppositions" (p.19) in its dualist stance becomes incompatible with an openness to difference and, moreover, how dominance follows in the wake of duality and constructions like "man/woman, culture/nature, mind/body, active/passive, civilisation/savagery" (Rose, 2004, p.19), which inevitably leads to the duality of dominant and 'other' voices. They are deeply disconcerted with the notion of pluralism and diversity in language, culture and location (Rose, 2004).

Carnes (2011) points to the positivist legacy of hegemonic western thinking and the idealisation of outcome, efficiency, and linearity. Linearity, and the idealistic perception of change as a value per se and a natural human aspiration, is also a recurring theme in the work of Rose (2014), who emphasises how the western fixation with future possibilities and achievements tends to be pursued at the expense of tradition and experiential knowing – as well as the contemporary world. Likewise, Battiste (2005) identified the legacy of the systematic exclusion of Indigenous knowledge from the 'Eurocentric knowledge' which underpins our education systems. She further sets out the task which Indigenous educators face in what she terms "animating the voices and experiences of the cognitive 'other' and integrating them into the educational process" (ibid). In so doing, a new, balanced centre is created to analyze Eurocentric education and its pedagogies (ibid).

Furthermore, as the internet and access to information blurs the boundaries of knowledge, postcolonial theory is concerned with the larger project of decolonizing knowledge and the production of transformative knowledge (Pratt, 1992; Pérez, 1999; Viruru, 2005). It further seeks to map how "the power of the West is manifested, of course, in its ability to project its influence beyond its own geographical borders – to render selectively permeable the boundaries of the *other* states and nations" (John, 1996, p.2). In examining local/global interrelationships, postcolonial theory also points out the severe limitations of claiming universal notions of history, experiences, and/or culture that subsumes differences (Mohanty, 2004). It also locates how the dichotomous representation of the world establishes a rigid division between local/global, citizen/foreigner, civilized/uncivilized etc. (Chow, 1993).

Finally, postcolonial theory is concerned with questions of agency and how marginalized subjects are capable of interrupting or resisting dominant discourses. The topic of agency is significant in educational research since agency is connected to the ability of student-subjects to contest dominant educational

practices that often place them in marginalized positions (Brayboy, 2004). As Spivak (1988) maintains, the question of agency cannot be separated from the ongoing reconfiguration of power discourses that silence subaltern subjects. Working across differences to educate a diverse group of students towards academic achievement is a critically important goal, however unfulfilled, within many national educational initiatives of public schools around the world today.

Methodology

Through this section of the paper, we first describe the processes we engaged with to identify the literature that has formed the basis of our work. We then go on to describe how we employed qualitative content analysis, based on the postcolonial theory, to identify codes within the papers, which we worked with to generate themes. During the period of March to June 2023, each of the named authors searched a number of databases and search engines, namely: Google Scholar, ERIC, EBSCOHOST, PRIMO; APA; Atla PsycInfo; British Library Document Supply Centre Inside Serials and Conference Proceedings; JSTOR Journals; Education Research Complete; Gale Academic OneFile; BASE; Directory of Open Access Journals; Erudit; Project MUSE; Scopus; Informit Indigenous Collection; NORA; and ScienceDirect, using the search terms 'arctic pedagogy' or 'arctic education' and 'digitalisation' or 'online learning and teaching', with varying results, from zero to hundreds of thousands of returns depending on the arrangement as well as the inclusion of some or all of the search terms. However, we also found this approach missed critical articles which were known to the authors. We needed to both expand and refine the search tools, and our struggle in determining the appropriate search terms was amplified by the need for refined definitions, for example: *Arctic*, for the purpose of this paper, has been defined as nations containing circumpolar regions; *teacher education* as training for those who intend or are working in K-12 education involved in learning about teaching; and *online learning* encompasses all forms of technology supported learning including, blended, hybrid, fully online, synchronous and asynchronous modalities. In further refining what encompasses the unique positionality of Arctic pedagogies, we also included the Indigenous groups of those regions, which required multiple repeated searches, using both the all-encompassing term Indigenous, but also the specific cultural groupings such as Sami or Inuit, and regional names such as Nunavut or Sápmi. Therefore, we found that regional nuancing of our search term was required, searching for cultural groups, indigenizing, and the regional language used to describe Arctic online pedagogy, resulted in each of our five research team members conducting slightly nuanced searches to gather our final data set of peer-reviewed articles. Through this manual search of thousands of articles, we ultimately found two-hundred and thirty-eight articles for inclusion using the associated search terms identified in Table 1.

We focused first on reviewing articles which centred on teacher education and educator training programmes with offerings supported by some form of digital learning, within the circumpolar north. We purposefully bound the search to a time frame of 20 years, from 2003-2023, as a means to address the tensions we observed in our initial searches. A shorter timeframe of 5-10 years more in line with the pace of change of technology, resulted in a preponderance of pandemic teaching articles as well as failing to acknowledge much of the critical work around Indigenous pedagogies of teacher education.

Although our goal was to capture current research, we recognise this approach introduced some older online education approaches, but concurrently neglected some of the seminal approaches to Indigenous teacher education.

Table 1: Search terms used to identify literature.

	AND (any of the following)	AND (any of the following)
Teacher preparation; Teacher candidates; Teacher education; Teacher training	Video conference; Teleconference; remote learning; Blended learning; Online learning; elearning; e-learning; Distance education; hybrid; hyflex	Circumpolar; Arctic; northern canada; Yukon; northwest territories; Nunavut; Labrador; Alaska; Inuit; Aleut; Yupik; Siberia; Greenland; Sámi; Sami; Saami; Karelia

Further exclusion of articles became an intensive and staged-process, we first limited our review to include only peer-reviewed articles and conference papers published in English, and excluded book chapters, dissertations, and technical reports. Through a review of article title, abstract and keywords, we additionally excluded articles published in geographic areas outside of ‘the arctic’, limiting our geographic results to articles from: Alaska, Canada, Finland, Greenland, Iceland, Norway, Russia, Sweden. This decision was a pragmatic one, which we acknowledge reduces the search in terms of physical geographies, rather than social relations (Massey, 1994), however it enabled us to move towards a more manageable total of ninety-one articles. We faced some difficult decisions in this process, as we also found many articles with relevance at the margins of this work, which add depth of conceptual understanding, but are not specifically related. For example, articles around Indigenous peoples’ uses of emerging technologies, but not within teacher education, add insight into decolonized repurposing of technology.

Furthermore, the process of carrying out this literature-based study has highlighted a limitation, namely the colonial legacy of the academic archive, which privileges dominant western academic voices, and normative approaches to digital pedagogies and teacher education, educator training, regardless of the cultural and spatial identities of learners. This is therefore a central and inherent limitation of this paper. To this end, we acknowledge that our findings are partial and only capture the voices and perspectives of a minority of authors.

Working with the remaining articles, we conducted an initial analysis of titles and abstracts and excluded a further twenty-nine articles, taking the total number of articles to sixty-two (see Appendix A for the final list of articles, including details of the database / search engine in which they were located). These exclusions occurred through the process of more detailed reading that revealed further duplicates in our literature set; literature based outside the named geographic parameters; and editorials. The sixty-two articles became the focus of an in-depth content analysis from a postcolonial perspective. As Short (1995) explains,

“Thematic content analysis is the use of theory or theme to analyse text or a series of text. The theory or theme is used as an analytical device, the main focus being analysis of the text rather than the development of theory” (p.21).

It is a flexible research method which can be used to make reliable inferences from texts using analytical constructs (White and Marsh, 2006). For the purposes of this paper, we employed postcolonial theory as our analytical construct. Once we had established our research question and ‘sample’ (i.e. the sixty-two research papers), the coding process was iterative and involved regular movement between our research question and the ideas coming through the literature (White and March, 2006). The coding categories emerged in an inductive manner when reading the articles from a postcolonial stance, with a particular holistic and non-binary view on recognising and valuing ‘differences’ (Verran, 2013). The qualitative content analysis began during a one day in-person discussion to establish a shared way forward between the authors. Due to geographic constraints, the remainder of the coding was conducted individually by the authors, who were each assigned a set of papers to analyse. Ultimately, however, approaching this task as a group enriched the research process as we explored, discussed, and justified the codes we identified. The dynamism of the process was also amplified through the collaborative nature of this work, with the researchers sharing initial codes and key ideas that emanated from the literature via email and a shared spreadsheet that created a ‘working memory’ for the group and a tangible artefact to visit and revisit.

Some of the papers analysed generated several codes, for example, three codes were identified within the paper titled, ‘Re-imagining pre-service teacher education in Ontario, Canada: A journey in the making’ (Hughes et al., 2015): [1] economics [2] digital transformations [3] individual competence. Other papers only generated a single code.

The initial codes (see columns 1 and 5 for the full set of initial codes, Table 2, below) were then grouped according to overarching themes. For example, the initial codes, ‘land’, ‘place’, ‘community’ and ‘inter-generational relationships’ were organised into the overarching theme of ‘Rootedness’. As a group, we felt that this theme captured that strong emphasis on connections (connections to-and-with land, place, community, and generations) that permeated the literature, which together created the sense of rootedness. A similar process was followed to generate the other 7 themes (see columns 2 and 4, Table 2 below). From these themes and working with the idea of points of ‘difference’ (Verran, 2013), a narrative emanated that resulted in the final 4 points of difference: Rootedness And Fluidity; Continuity of the Story And Fragmentation; Preservation And Transformation; and Traditional Seeing And (Western) Frameworks’ (see column 3, Table 2).

These ‘points of difference’ will be explored and examined in the Findings and Discussion below, with a particular view to exploring and surfacing the richness of Arctic pedagogies (Battiste, 2005). By highlighting and engaging with the differences that emanated from the literature, we aim to ensure that Indigenous pedagogies are not excluded, nor side-lined from the findings and discussions that follow. Rather, the differences are viewed as opportunities to enrich our understandings of what *Arctic* might be when it comes to online teacher education and educator training.

Table 2: overview of the movement between initial codes (outer columns), to themes and points of difference (central column)

1.	2.	3.	4.	5.
Initial Codes	Themes	Points of Difference	Themes	Initial codes
Land (connections to / relationship with / source of knowledge)	Rootedness	Rootedness And Fluidity	Fluidity	Mobile learning
Place (connections to / relationship with / source of knowledge)				Access / equity / inclusion
Communities (community-based learning)				Individual competence
Intergenerational relationships				Economic efficiency / recruitment
Elders / Indigenous community members	Continuity of the story	Continuity of the Story And Fragmentation	Fragmentation / shareability	Information transfer
Oral traditions: story / story-telling				Efficiency
Histories	Preservation	Preservation And Transformability	Transformability	Digital transformations
Diversity of communities / languages				Transforming digital (through creation / ownership)
Culturally-responsiveness				Uniformity / Assimilation
Worldview 'two-eyed'	Traditional seeing	Traditional Seeing And (Western) Frameworks	Western Frameworks	Pedagogy (dominant forms of) Western models / frameworks
Sources of knowledge				Blended / role of the instructor

It should be noted that not all 62 articles analysed are included in the following section. This is the result of a combination of factors, including the word-count available within contemporary, academic peer-reviewed journal articles, and the postcolonial approach to the analysis we embraced.

Findings and discussion

Prior to an exploration of the findings, it is important to highlight the positionality of the researchers involved in authoring this manuscript. The authors come from diverse backgrounds, not all of which represent the communities we have investigated. This group composition created opportunities for Indigenous and non-Indigenous perspectives to come together. The group dynamic was supportive in drawing awareness to potential biases, particularly in relation to embedded, colonial perspectives and assumptions.

Due to the nature of this study, the findings that emanated from our analysis capture literature from across Arctic regions. The diversity of these regions must be re-emphasised (Panina et al, 2015; Barakhsanova et al, 2019; Jester and Fickel, 2013). To capture this diversity, we have tried to ensure that the places and communities the works we draw together in the analysis are explicitly recognised and that terms, such as 'Indigenous pedagogies', are used in the plural rather than singular.

Rootedness And Fluidity

Much like the context we identified in our introduction, the first theme which arose from the literature seated pervasive discussions of rootedness and fluidity found within a majority of the articles. 'Rootedness' was identified as a theme between and across the diverse geographic locations, localities, communities, and societies. The theme developed from several codes, including land (connections to / relationship with / source of knowledge); place (connections to / relationship with / source of knowledge); communities (community-based learning); and Intergenerational relationships.

The importance of land, as a source of knowledge, identity and belonging (Tulloch and Moore, 2018; Moore and Galway, 2018), and place, as a means of connecting students with their physical and cultural environments (Lowan-Trudeau, 2014; Hiltunen et al., 2021) are prominent in the literature. Furthermore, Hampton and DeMartini (2017) suggest that 'critical land literacy' should be a core aspect of teacher education as a "critique of ongoing settler-colonialism in Canada" (p.245).

This sense of Rootedness through land and place is also explored through the design of teacher education programmes, for example, drawing on the narratives of Inuit pre-service teachers, instructors, and administrators, Tulloch and Moore (2017) discuss the need for community-based teacher education programmes. Specifically, they describe the importance of 'community-centred education in Nunatsiavut communities' in relation to fostering relationships through place to the people and communities who have lived there for generations:

"The approach of learning from the land locates learning in a particular place and connects learners to the ways of knowing, doing, and being of the peoples who have lived in and on that land for a long time. Inuit and other Indigenous peoples describe a connection to the land through which the ice and land is not just a place, but a relationship to be fostered." (Tulloch and Moore, 2017, p.78)

The significance of the community (Tulloch and Moore, 2018; Oloo and Relland, 2021) and the importance of deeply rooted, experiential practices in the context of teacher education is discussed throughout the literature (see, Jester and Fickel, 2013; Boylan and Munsch, 2007; Lowan-Trudeau, 2014; Panina et al, 2015). These insights are explored in tangible detail by Kolberg and Sem (2022) who bring South Saami traditional knowledge to teacher education by using the *derhvie-gâetie* (Saami turf hut) as a 'cradle' for knowing, creating, and learning. Traditional knowledge exchanges are important within an Indigenous context, Harju-Luukkainen et. al. (2023) stressed the importance of making room for online meeting places for Indigenous language and knowledge exchanges.

Sitting in tension with this idea of Rootedness through tangible experiences with, and in-relation to, people, places, artefacts is the 'Fluidity' and reach of digital, online, and mobile technologies that are being embraced within Arctic regions. These technologies are being harnessed as: an economically efficient way to enhance access, equity and inclusion within teacher education / educator training (Hughes et al., 2015; Peacock et al., 2009; Johanson and Karlsen, 2021); to support local economies (Panina et al., 2015; Barakhsanova et al., 2019); and to address teacher recruitment challenges (Copland et al., 2022; Johanson and Karlsen, 2021). As stated by Koole and wâsakâyâsiw Lewis (2018), in the context of developing mobile learning tools for Cree language teachers, emerging digital and mobile learning technologies can enhance young Indigenous peoples' right to access quality education. What follows is the need to ensure that teaching students have digital skills and competencies (Bergum Johanson et al., 2023; Madsen and Thorvaldsen, 2022). However, Gordon et al. (2014) highlight the need to go beyond the enhancement of students' digital skills and the findings from their study demonstrate the positive impact of employing Aboriginal digital designers and the use of Aboriginal iconography to underpin digital learning environments. This offers a digital rootedness, which is often missing in online learning.

As fore-fronted in this paper the idea of Fluidity, can also be synonymous with individual competence and disconnection (Bauman, 2009). To this end, Hughes et al. (2015) suggest, the integration of technology and pedagogy can be understood as individual performativity and an agency promoting project. While the fluidity of digital solutions to economic and geographical challenges cannot be understated, what is lost when fluidity is valued over rootedness of immersive community-and-land-based experiences with-and-for-others. From a postcolonial perspective, it is important to ask what knowledges, ways of being, interactions these technological 'solutions' privilege? Do the benefits of 'reach' and 'access' undermine connections to community, places, and languages?

Continuity of the story And Fragmentation

A central and interconnected aspect of 'Rootedness' was the significance of Elders in Indigenous communities. Elders are essential to ensuring Indigenous knowledges, connections to place and land, traditions and customs are living and live on are synonymous with Indigenous pedagogies. In terms of teacher education, Jester and Fickel (2013) describe how "a cross-cultural field experience initiative that placed preservice teacher candidates in Alaska Native Village schools" created opportunities for the preservice teacher candidates to learn from and with Elders and other community members. Student teachers learnt about traditional customs and skills such as dancing, sewing, carving, and

skinning. They learnt about songs, artworks and languages that have travelled through generations. This paper, and others (Moore and Galway, 2018; Etherington, 2022; Lowan-Trudeau, 2014), signal the rich history of Indigenous ways of being, knowing and doing and the central role Elders play in developing culturally-responsive teacher-education programmes within Arctic regions. Other studies, for example Oskineegish (2020), highlight the importance of the story and storytelling as a method for teacher educators to share their lived experiences, build relational bridges in the classroom and to learn from the Indigenous students.

The question then follows, how might such rich, intergenerational, and relational ways of being and knowing be translated into a format that can be taught through digital / online platforms, which privilege short, fragmented, packages of knowledge that can be shared efficiently and effectively across distances, unbounded by time and space? This question has arisen from the, at times, stark shift in language that can be detected in some of the literature. To illustrate, Panina et al. (2015) begin their paper by outlining the importance of family connections in teacher training, then advocate for the use of digital technologies to 'transfer information'. This signals a more technocratic and instrumental view of digital technologies that is more aligned with Western / European pedagogical approaches, which favour acquisition of de-contextualised knowledge. While there is evidence of more thoughtful approaches to online teacher education that 'blend' or 'bridge' Indigenous pedagogies with online tools (see below), this is an important difference to contemplate, to avoid a neatly packaged, homogeneous response to some of the challenges associated with teacher education and educator training in Arctic regions.

Preservation And Transformation

Building from the interrelated themes of 'Rootedness' and 'Continuity of the story' the theme, 'Preservation' emerged. Preserving the diversity of Indigenous knowledges and ways of being, doing and learning within Arctic regions and resisting practices that encourage conformity is a theme which transcends the literature (Sollid et al., 2023; Lewthwaite and Connell, 2018). However, the idea of preserving ways of being is juxtaposed with the idea of transformations and transformative practices. In educational research, the idea of transformative practices is framed positively as a means to move-beyond the status quo: to question dominant practices that exclude and marginalise. Some of the literature reviewed that focussed on transformations within teacher education programmes is grounded in Indigenous paradigms. For example Oloo and Relland (2021), in their study of six Indigenous students in a community-based Master of Education programme in western Canada, highlight the professional transformations that can take place. Likewise, Etherington (2022) surfaces the cognitive and moral transformations that can take place when 'cultural bridges' are created between European and Aboriginal ways of learning.

Within the digital technologies in teacher educator / educator training, however, the idea of transformation needs to be carefully considered. While Hughes et al. (2015) surface the transformative potential of digital technology as an emancipatory and inquiry-driven source for teachers and learners, Koole and wâsakâyâsiw Lewis (2018) warn that the transformative potential of mobile learning technologies and strategies is potentially risky for Indigenous education, due to its possible application

in favour of mainstream cultural practices and 'cognitive uniformity'. Such warnings surface another perspective that encourages critical reflection on the appeal of 'transformative practices': when we talk of transformations, what and who do we seek to transform? Hughes et al (2015), drawing on Freire, warn of the complexities when talking of transformations in the context of 'digitally-enhanced societies' in particular:

"Informed by Freire (1970 / 1993), we extend his notions of reading and writing the world to a context of digitally-enhanced learning. Understanding the socio-political, cultural-historical conditions of one's life, community, and world (reading the world), and taking action to transform one's life, community, and world (writing the world) take on new meaning when contextualized within the complexities of modern digitally-enhanced societies" (Hughes et al., 2015, p.439).

Within the literature, however, there are examples of ways in which more relational, Indigenous pedagogies that resist 'cognitive uniformity' are being brought together with the digital format. Indeed, Vininsky and Saxe (2016) argue that multiple forms of expressionism, representation, and engagement are required when digital and face-to-face practices are brought together. This position is furthered still by Koole and wâsakâyâsiw Lewis (2018) who call for the design of mobile applications that allow for multimodal representations of the Indigenous culture as well as language and dialect translating features. Given the nuance required, we are hesitant to share a list of examples, for fear they will give an illusion of a 'simple' solution and way forward. We therefore introduce the following examples with the caveat that while these illustrate possibilities in terms of the coming together / bridging of Indigenous pedagogies and the online format, the complexity of this process must be recognised, understood, and enacted through on-going critical reflection, particularly in relation to colonialism (Hanson and Danyluk, 2022), given the pervasive nature of imperial practices.

Hanson and Danyluk (2022) describe how they have used 'talking circles' as an experiential way of 'knowing, being, and doing' (p.1) during online learning interactions as a form of 'collective learning' that can help to ensure that everyone has the opportunity to have a voice. Other examples include the use of Aboriginal iconography (Gordon et al, 2014) and using digital technologies to promote multimodal representations (Oskineegish, 2020). From these examples, questions follow, such as: who is involved in designing these digital spaces and interactions; whose agendas are being served; what ways of seeing, understanding, and learning are privileged?

Traditional Seeing And (Western) Frameworks

Building on these questions, we arrived at the themes of 'Traditional Seeing' and '(Western) Frameworks', which capture the epistemological divergence and differences between these positions. These themes permeate the literature and can be identified both implicitly and explicitly. A more explicit exploration of the coming together of these themes is expressed as 'two-eyed seeing' (Bartlett et al., 2012; Snow, 2020), which is described by Snow (2020), citing Elder Albert Marshall, as binocular vision where the views of both Indigenous and non-Indigenous cultures and epistemologies are brought together simultaneously.

To this end, the literature reveals ways in which such two-eyed seeing can be enacted. For example, Koole and wâsakâyâsiw Lewis, (2018) suggest that Western models and frameworks can be used to

address Indigenous issues and interests in education technology research. Likewise, Hughes et al., (2015) point to the coming together of Western frameworks with Indigenous ways of knowing however, through a postcolonial lens, an asymmetry exists in these papers which contributes towards an unhelpful binary that diminishes the role of Indigenous epistemologies in relation to the more dominant Western models.

The extension of this concern is highlighted by Somby and Olsen (2022) and Gordon et al. (2014) who highlight the risks of 'othering' Indigenous knowledges and culturally-responsive pedagogies become the 'specialisation' of some which, in turn, leads to marginalisation and othering. Such insights contextualise Snow's (2016a, 2016b) finding that Western approaches to teaching and learning uphold exclusion and non-completion of Indigenous pre-service teachers and undergraduates and digital systems reinforce exclusionary and inflexible institutional rules in the work with Indigenous teacher students.

Examples of 'two-eyed' seeing in practice do come through the literature and is a contested approach. Examples of this include Ekeland (2022) who used Inquiry-Based Learning as an approach to challenge normative instrumental approaches to teaching history in which he encouraged "questions concerning the relationship between national master narratives and Sami Indigenous knowledge practice..." (p.961). Lowan-Trudeau (2014) explores the possibility of creating a co-created Third Space of knowing in which local Elders and Euro-Canadians all contributed to the environmental education of student teachers. However, Lowan-Trudeau and Snow (2020) highlight the crucial role of the instructor to 'bridge' perspectives, so as not to water down or lose Indigenous perspectives.

Conclusions

To draw this paper to a conclusion, we return to our guiding research question: What is *Arctic*, when it comes to online teaching and learning in teacher education and educator training? From the themes and points of difference identified through our in-depth literature search it is clear that the differences highlighted: Rootedness And Fluidity; Continuity of the Story And Fragmentation; Preservation And Transformability; and Traditional Seeing And (Western) Frameworks, are in themselves an essential part of the *Arctic-ness* of online pedagogy and education in the context of teacher education / educator training and therefore need to permeate conversations within, and beyond, this field. We argue, as Battiste (2005) suggests, that in highlighting these differences, we have contributed towards a 'fresh vantage' point.

Despite inherent limitations within the literature review process, including: the vast array of literature; the limited nature of this literature due to the afore-mentioned colonial legacy that exists within academic publishing; the need to impose some boundaries on the literature we analysed, e.g., by geographic location; and our responsive, open, flexible and adaptive methodological approach, this vantage point has identified *points of difference* in the literature reviewed. In identifying these points of difference, we have tried to avoid contributing to a binary position (Chow, 1993; Fogarty et al., 2015), which results in an asymmetrical leaning to one view or the other. We are conscious, however, that surfacing these differences and highlighting the richness of Indigenous knowledge and perspectives in this field, that

there will be tensions and conflicts. Lewthwaite and Connell (2018) describe the ever-present tensionality which, coupled with hope, is required to disrupt dominant, hegemonic practices. Likewise, Brant-Birioukov (2017) warns that such discussions do not lend themselves to 'safe', 'conflict-free' spaces, however, highlights the need for ethics and ethical relationality as of part of these conversations, "[w]ithout employing such an ethical space, Indigenous and non-Indigenous thought run the risk of assimilating, appropriating or misconstruing one another's discourse" (p.86).

Taking a postcolonial approach to this systematic review of literature relevant to online and *Arctic* teacher education / educator training, has surfaced the ways in which Western teacher education and teacher training programmes have dominated the thinking which underpins both research and the design and process of digital learning for teacher education students in the Arctic. Where Indigenous educators, researchers and students are positioned to take the lead in discussing, designing the underlying online architectures of programmes and courses, a different, ethically and culturally relevant digital learning experience is both possible and necessary.

It therefore follows that we contribute towards the creation of more ethical conversations within teacher education and educator training by concluding with questions for consideration for those undertaking research in this area and those in positions to design and create online courses, modules and/or programmes. These questions stem from the *points of difference* identified within the literature:

- How do those who create, run, facilitate teacher education / educator training programmes critically examine the role of digital technologies as means to address learner equity that goes beyond 'access'? How can the fluidity of digital technologies be used to further connections / relations / customs / languages and traditions?
- How might we reflect more critically on the 'transformative' nature of learning? Who and what needs to transform? What might be lost?
- How are the *points of difference* drawn upon and used to support educators and researchers to reflect on their positionality when working within and beyond Indigenous communities? How is this positionality enforced, or challenged, through the digital tools, pedagogical approaches and/or research methods employed?
- How might these *points of difference* open up spaces within design phases of online teacher education / educator training programmes to Indigenous and non-Indigenous community members to create inclusive and dynamic learning and research opportunities that draw upon both Indigenous worldviews and non-Indigenous perspectives?

These questions act as provocations for on-going thought and action. We do not anticipate that they will be 'addressed', but instead open dialogue and thoughtful contemplative spaces. Through these questions we hope to contribute to the enhancement of teacher education and educator training programmes, particularly for Indigenous, rural and remote communities.

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Appendix A

	Database / search engine	Reference (alphabetical)
1	ScienceDirect	ANDREASEN, J.K., (2023). School-based mentor teachers as boundary-crossers in an initial teacher education partnership. <i>Teaching and Teacher Education</i> , 122 (103960), pp.1-10.
2	Google Scholar	BARAKHSANOVA, E.A., BARAKHSANOV, V.P., OLESOV, N.P., MALGAROV, I.I. and NEUSTROEV, A.A., 2019. Current trends in digital education development in the Republic of Sakha (Yakutia). <i>Espacios</i> , 40 (9), p.18-29.
3	Education Research Complete	BAZLEY, K., WHITE, K., BOBAK, M., PINTANDE, C. and LILES, A., (2016). Broadening Cultural Horizons of the Next Generation of Classroom Teachers: Undergraduate Perspectives from "Bush" Alaska. <i>Delta Kappa Gamma Bulletin</i> , 82 (5), pp11-19.
4	Scopus	BERGUM JOHANSON, L., LEMING, T., JOHANNESSEN, B.H. and SOLHAUG, T., (2022). Competence in Digital Interaction and Communication—A Study of First-Year Preservice Teachers' Competence in Digital Interaction and Communication at the Start of Their Teacher Education. <i>The Teacher Educator</i> , 58 (3), pp.270–288
5	EBSCO	BOYLAN, C.R. AND MUNSCH, T.R., (2007). The impact of an immersion experience in Alaskan Native community cultural life on pre-service teachers. <i>Education in Rural Australia</i> , 17 (1), pp.71-83.
6	Education Research Complete	BRÄNDSTRÖM, S., WIKLUND, C. and LUNDSTRÖM, E., (2012). Developing distance music education in Arctic Scandinavia: electric guitar teaching and master classes. <i>Music Education Research</i> , 14 (4), pp.448-456.
7	Google Scholar	BURNS, A., DANYLUK, P., KAPOYANNIS, T. and KENDRICK, A., (2020). Leading the pandemic practicum: One teacher education response to the COVID-19 crisis. <i>International Journal of E-Learning & Distance Education</i> , 35 (2), pp.1-25.
8	Gale Academic OneFile	COOPER, J.E., (2007). Strengthening the case for community-based learning in teacher education. <i>Journal of Teacher Education</i> , 58 (3), pp.245-255.
9	Google Scholar	COPLAND, P., CARPENTER, H., LYALL, J., ETOK, N., SNOW, K. and KANE, R., (2022). Ilisaijinnngulaqtut (They became teachers): A Discussion of Inuit Teacher Education Opportunities Within Inuit Nunangat. <i>The Morning Watch: Educational and Social Analysis</i> , 48 (1-Spring), pp115-143.
10	Informit Indigenous Collection	DA SILVEIRA, Y., (2009). Inuit teachers in training and how they relate to written materials. <i>Etudes inuit. Inuit studies</i> , 33 (1/2), pp.245-259.
11	JSTOR	DEER, F., (2013). Integrating Aboriginal perspectives in education: Perceptions of pre-service teachers. <i>Canadian Journal of Education/Revue canadienne de l'éducation</i> , 36 (2), pp.175-211.
12	Education Research Complete	DRAGON, K., PEACOCK, K., NORTON, Y., STEINHAUER, E., SNART, F., CARBONARO, M. and BOECHLER, P., (2012). Digital opportunities within the aboriginal teacher education program: A study of preservice teachers' attitudes and proficiency in technology integration. <i>Alberta Journal of Educational Research</i> , 58 (2), pp.263-285.
13	APA PsycInfo	DUQUETTE, C., (2003). Perceptions of learning and stages of concern among graduates of a native teacher education program. <i>Alberta journal of educational research</i> , 49 (4), pp.341-35.
14	ERIC	DUQUETTE, C., (2007). Becoming a role model: Experiences of native student teachers. <i>Alberta Journal of Educational Research</i> , 53 (4), pp.387-400.
15	Gale Academic OneFile	EASTMURE, L., (2011). Honouring the past, touching the future: Twenty-two years of Aboriginal teacher education in the Yukon. <i>Northern Review</i> , (34), pp.35-60.
16	Scopus	EKELAND, T.G., (2022). Designing and Reflecting on Process Quality: A Case Study of Encounters and Clashes among First-year Students in Teacher Education. <i>Scandinavian Journal of Educational Research</i> , 66 (6), pp.977-990.

17	Project MUSE	ETHERINGTON, M., (2015). Aboriginal perspectives and issues in teacher education. <i>Journal of American Indian Education</i> , 54 (2), pp.52-68.
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