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# Incorporating sustainable development and inclusive education in teacher education for the Arctic

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**ABSTRACT**
This article explores how teacher education institutions can better prepare teachers to help to create inclusive and sustainable self-determined Arctic communities. Building on the theoretical concepts of just sustainabilities, transgressive learning, the capabilities approach, and relational thinking within inclusive pedagogy, we propose that education for sustainable development (ESD) and inclusive education (IE) be more centrally situated across curriculum areas for all new teachers. To achieve this in practice, we suggest that teacher education programs need to better prepare new teachers to engage in critical participatory action research that empowers them to collaborate with Arctic communities.

## Introduction

The authors of this article come from different traditions within initial teacher education, Gregor with a background in inclusive education, Sally sustainability, practicum and Indigenous education and Yngve education management and newly qualified teachers. We met at a conference where we were struck by the alignment of our research and teaching backgrounds in the context of preparing new teachers for the future. We recognized similarities in the way that the pre-service and new teachers that we encountered in our own teaching and research often lacked confidence in their abilities, or felt inadequately prepared, to incorporate the traditions of education for sustainable development (ESD) and inclusive education (IE) into their teaching. Although both areas are purported to be essential aspects of school education, it has been documented that beginning teachers need 'more knowledge about inclusive pedagogy, adapted education and relational thinking' (Antonsen et al., 2020, p. 1) and that greater knowledge and understanding of sustainability concepts leads to increased ESD self-efficacy for teaching (Evans et al., 2016). In Sweden and Norway where we live and work, ESD and IE form key parts of the 'Core curriculum' for compulsory school and are described as being 'fundamental tasks of the school' in Sweden (Skolverket, 2018) and 'principles for education and all-round development' and 'principles for the school's practice' in Norway (Utdanningsdirektoratet, 2020).

This article will first provide a brief background to initial teacher education (ITE) as it relates to ESD and IE. Internationally, the connection between ESD and IE has been

developing, though both traditions appear to have developed independently of each other despite working towards shared and common goals. We outline a position calling for greater focus on education for ESD and IE in all teacher preparation programs regardless of teaching specialty. We believe that for schools in the Arctic to most benefit from the teachers within and entering communities, ESD and IE should be emphasized as cross-curricular priorities for all teachers, explicitly taught to all students and form the core of school-community collaborations.

Hence, this article aims to provide some kind of bridge between these two traditions by presenting the closely aligned concepts of just sustainabilities, transgressive learning, the capabilities approach, and relational thinking within inclusive pedagogy. Using these concepts to bridge ESD and IE will create an interdisciplinary grounding for teacher education and current educational research. In conclusion, we theorize that for school education to be truly inclusive and prepare students for the future in the Arctic, new teachers should draw upon action research to better collaborate with local communities to respond to persistent social, cultural and environmental inequality as manifestations of systemic global dysfunction.

## Background

### Initial teacher education (ITE) and Arctic communities

Teacher education programs play an important role not only in teaching and research activities, but also in contributing to collaborative leadership with sustainability and inclusive initiatives of various kinds within the communities in which they are situated. However, as teacher education programs usually service many different and diverse communities with newly qualified teachers it is often the case that there is limited community consultation. And although global imperatives such as the United Nations Agenda 2030 and the Sustainable Development Goals (SDGs), UNESCO's Education For All (EFA), the Global Education Monitoring (GEM) report (UNESCO, 2020) and Education for Sustainable Development (ESD) programs, require communities to broaden access to mutually beneficial authentic educational opportunities this is rarely done with centralized national ITE programs.

As educators, we have a responsibility to create the capacities for critical engagement with the key issues of our time and to foster practices such as: 'anticipatory thinking, integrative thinking, dealing with complexity and ambiguity … and to create learning spaces for the development of qualities such as care, empathy and solidarity' (Peters & Wals, 2016). As Kopnina and Cherniak (2015) remind us, 'an education is pointless if students enter a society that does not allow for the inclusive support of the values and perspectives they have learned' (p. 370). In this dynamic and global environment education must find local ways to respond to urgent global sustainability challenges such as climate change, mass extinction and rising inequality. In light of these challenges, teacher education and universities more broadly need to work collaboratively with local communities to provide educational expertise in projects that are of importance for addressing the local and global sustainability challenges, and, vice versa, to bring in local and indigenous knowledge into the curriculum.

In order for Arctic communities to be more responsive to the global sustainability challenges, to address 'wicked problems' and systemic dysfunction, they must develop more

innovative forms of hybrid learning arrangements and collaborations (Wals & Benavot, 2017). Centrally placed in these networks, schools must therefore be more responsive, responsible and ethical, and more relevant to the life worlds of students and communities in relation to these challenges (Tassone et al., 2018). When teachers are empowered and work proactively with local actors the relevance of learning for students is increased (Mayer-Smith et al., 2007). Additionally, when schools are embedded in communities, teachers are thus upheld and seen as legitimate partners in community endeavors when addressing global issues (Rahm, 2016).

Even though Norway and Sweden require teachers to engage in research and development as part of initial teacher education programs, there is not a mandated focus on either ESD or IE, or engaging in context-specific community-based research. This, we argue, needs to change if teachers entering Arctic communities have any hope of engaging and collaborating with those communities for better school education.

## Education for sustainable development (ESD)

ESD is defined by the United Nations as education that 'empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity' (UNESCO, 2020, para. 1). ESD is a field that stresses the links between the environmental and the socio-cultural, between the local and the global, the past, present and future, and the human and the non-human world and 'aims to develop people's willingness, commitment and qualities in order to make change upon existing structures for a more sustainable future' (Schröder et al., 2020, p. 2).

The ultimate aim of ESD is to empower learners to take informed decisions and responsible actions. ESD is holistic and transformational education which addresses learning content and outcomes, pedagogy and the learning environment. ESD encompasses various socio-cultural educations such as Global Citizenship Education, Environmental Education, Climate-change Education and Peace Education for example (Schnack, 2008). And while ESD has been criticized because it is conceived as placing too great a 'focus on continuous development and economic growth' (Evans, 2019, p. 9) it is of value to us. Because of its broad approach that combines these socio-cultural approaches to education ESD can begin to address the environmental, social and economic issues in Arctic communities collaboratively.

## Inclusive education

Inclusive education is 'about ensuring that every learner feels valued and respected, and can enjoy a clear sense of belonging' (UNESCO, 2020, p. V), in other words it 'involves the right to education for all students' (Haug, 2017, p. 206). Having been on the global education agenda since the 1994 Salamanca statement (UNESCO, 1994), IE has become a much touted, if little understood political objective in education where 'a clear working definition has thus far been elusive' (Reindal, 2016, p. 1). Göransson and Nilholm (2014), after critically surveying IE literature reported that,

> Four different understandings of inclusive education were found: (a) inclusion as the placement of pupils with disabilities in mainstream classrooms, (b) inclusion as meeting the

social/academic needs of pupils with disabilities, (c) inclusion as meeting the social/academic needs of all pupils and (d) inclusion as creation of communities. (p. 265)

Because of the range of narrow and broad definitions, there is no official working definition of IE, we will contextualize this section using the Norwegian interpretation. In Norway, the implementation of IE, at policy, organizational and implementation levels, is understood and integrated within adapted education (tilpasset opplæring). Norway started working with inclusion comparatively early with the theoretical underpinnings for adapted education being set down in the late 1960s and becoming mandated with the Integrated Education Law of 1975. It is interesting to note that this law was over a decade ahead of international declarations which laid the foundations for today's inclusive education.

Adapted education in many ways has historically challenged traditional teaching knowledge and approaches in Norway. More recently Maxwell and Bakke (2019) found that uncertainty about teaching manifests as a result of various conflicts and dilemmas arising from the way adapted education is understood and practised. One example of such value-conflicts is when some students are prioritized over others even though the general intention is to treat all pupils equally and equitably. Another dilemma in the Norwegian teacher education system is that trainee teachers must choose between specialization in subjects or inclusive education; as such the system strengthens the dichotomy of general versus special education (Antonsen et al., 2020). As a result, newly qualified Norwegian teachers in the Arctic report that they need more knowledge from their teacher education to work inclusively (Antonsen et al., 2020). These conflicts and dilemmas will have a negative impact on delivering effective ESD and IE and, in turn affect how institutions create inclusive and sustainable self-determined Arctic communities.

## Concepts for bridging ESD and IE for teachers

In this section, we outline some concepts that, we suggest, are highly relevant to both traditions and can provide a bridge to greater learning in Arctic communities. ESD, or indeed any form of sustainability education, and IE are fundamentally types of education that encourage the development of skills, values and attitudes necessary to create conditions that are more sustainable and just.

### *Just sustainabilities*

Agyeman's (2007) influential concept of 'just sustainabilities' which is a conscious combining of social justice and sustainability is important. Just sustainabilities is defined as 'the need to ensure a better quality of life for all, now, and into the future, in a just and equitable manner, whilst living within the limits of supporting ecosystems' (Agyeman et al., 2003, p. 5). Agyeman explains that using the plural sustainabilities 'acknowledges the relative, place and culturally bound nature of the concept' (Agyeman, 2013, p. 3) that the singular form excludes. The concept consists of four essential and interconnected conditions that are equally important:

- Improving quality of life and well-being;

- Meeting the needs of both present and future generations (intra- and inter- generational equity);
- Justice and equity in terms of recognition, process, procedure and outcome.
- Living within ecosystem limits (also called one planet living) (Agyeman, 2013, p. 5)

This concept of just sustainabilities, we argue, is critical to social integration and connection in school and community education. We can see traces of 'just sustainabilities' in the national curricula of both Norway and Sweden; however, as Straume (2016) argues ESD should be handled in a more systematic and serious manner in education. For example, in 2020 Norway introduced sustainability, well-being, and democracy as central themes in the general education curriculum at all levels (Utdanningsdirektoratet, 2017). However, as a consequence of being defined somewhat vaguely and superficially, these three themes have not been clearly placed in learning outcomes and assessment criteria (Utdanningsdirektoratet, 2019). To avoid this in the future, we argue that ESD needs to take a central position in all subjects within teacher education (Windsor, 2019). We need teachers with competence and skills who can educate for 'just sustainabilities' in the Arctic and many theorists argue that transgressive learning is a necessary way to achieve this (see for example Lotz-Sisitka et al., 2015; Peters & Wals, 2016; Wals & Benavot, 2017).

### Social, transformative and transgressive learning

Educators can approach learning in ESD and IE in different ways, and employ different practices: social learning, transformative learning and transgressive learning (Lotz-Sisitka et al., 2015). Social learning refers to practices of learning inspired by types of dissonance created when different perspectives meet in socially favorable conditions (Peters & Wals, 2016). Dissonance, diversity and social cohesion are critical in order to find new forms of thinking, to break stubborn routines and practices and to co-create alternative ones. Transformative learning opens up new lenses of perception and strengthens our capacities for understanding and navigating complex challenges, like the ones of addressing socio-ecological challenges and creating more sustainable societies. Mezirow (2000) suggested transformative learning is when we come to recognize and modify the assumptions and beliefs that frame our tacit points of view and influence our understandings, our values and interpretation of the world, but also of others and that determine our actions. Both the idea of social learning and transformative learning are necessary in our continuous search for a world that is more sustainable than the one in prospect.

However, it must be recognized that these types of learning are not enough particularly in Arctic communities because they do not consider the neoliberal forces that structure education to almost exclusively serve 'the economy' which depends on constant growth, efficiency, materialism and consumerism, and one that neglects to adequately value the Earth's resources and the non-human world (Peters & Wals, 2016). This is where Huckle and Wals (2015) and Lotz-Sisitka et al.'s (2015) interpretations of transgressive learning are important. They describe transgressive learning as that which involves interactive and critically reflexive processes that expose systemic dysfunction and create the disruptive capacity needed to create a viable counter narrative. As we are aware anthropogenic activity is the major cause of climate change, as agreed by 95% of climate scientists (Plutzer et al., 2016) and 'disproportionately affects the Arctic's overwhelmingly fragile ecosystem' (Short & Engel, 2019, p. 419). It is therefore important that teachers are prepared to engage

themselves and their students in transgressive forms of learning that empower them. To do this, teacher education needs to introduce more than the concepts and theories of social and transformative learning and must go further towards ideas and experiences of transgressive learning (Peters & Wals, 2016). For new teachers to be prepared to facilitate transgressive learning in school, they need opportunities to participate in such learning from their education, for example as part of field work connected to their bachelor or master thesis.

## *The capabilities approach*

Amartya Sen's (1985, 1999, 2009) Capabilities Approach is an evaluative framework that assesses well-being, justice and human development or more simply put, the quality of a person's life. Sen (2009) argued that life is a combination of a person's 'doings' and 'beings' and that to understand one's quality of life requires assessing the freedoms or capabilities to choose the life that he or 'she has reason to value' (p.231). Or more simply put Nussbaum (2003) explains that 'if we ask what people are actually able to do and be, we come closer to understanding the barriers societies have erected against full justice' (p. 33). However, justice is not a simple concept especially as it relates to Arctic communities. Thus, as Sen (2009) suggests communities must be involved in listing their own set of capabilities because this control over the conditions of life is necessary for justice, and because capabilities are culturally specific.

The capabilities approach has been used in research on integration (Reindal, 2010, 2016) and inclusion and special education (Terzi, 2014) where it has been shown it can engage children, teachers and families in principle, and in practice recognize differences, rather than shortcomings. Further implications are the development of a policy and practice that clarifies the processes required to develop capabilities and appreciating functions and the types of resources required to generate relationally inclusive environments. Introducing the capabilities approach in to teacher education will provide new teachers with a framework to conceptualize and evaluate for example inequality and well-being for people and communities. However, the limitations of the capability approach as a framework for policy and social change are that explanatory theories are needed for operationalization (Robeyns, 2005). Stemming from the capabilities approach relational thinking is a further development of an educational practice that equalizes learning and well-being in school (Dalkilic & Vadeboncoeur, 2016).

## *Relational thinking within inclusive pedagogy*

A relational thinking approach to education shifts the focus from instrumental thinking such as having clear recipes and solutions to the work, towards what Florian et al., (2017) suggest as 'a more nuanced and relational way of considering how schools can respond to difference is needed' (Florian et al., 2017, p. 27). When teachers develop the ability to act relationally they are simultaneously able to develop a more inclusive pedagogy (Florian et al., 2017).

For teachers, emphasis on a relational approach involves the ability to question their assumptions and increase their own insight into the relationship between behavior and underlying thoughts and feelings. Aspelin (2014, p. 240) notes that a key attribute in developing such a relational approach, and promoting adapted education, is the teacher's ability to understand the individual student's perspective (Aspelin, 2014, p. 240). Relational

thinking means that inclusive education should both contribute to and be the result of an education system that provides a reasonable opportunity for all children to be active agents in their own learning (Dalkilic & Vadeboncoeur, 2016). One disadvantage of relational thinking is that the term becomes somewhat ambiguous because of its links to social ideology, human values (humanity / human view), and principles of integration, inclusion and normalization.

Inclusive pedagogy is a term that is distinct from 'inclusive education' and 'inclusive practice'. Defined as 'the knowledge and skills needed for teachers to be inclusive in their practice and the implications for teacher education and professional development that arise from it … to bring together what teachers, do, know and believe about inclusive classroom practice' (Florian & Black-Hawkins, 2011, p. 814). According to Florian and Spratt (2013, p. 124), inclusive pedagogy is defined by three principles:

(1) Differences must be accounted for as an essential aspect of human development in any conceptualization of learning,
(2) Teachers must believe (can be convinced) that they are qualified and in able to teach all children,
(3) The professionals must continuously develop creative new ways of collaborating with others.

In their study, Florian and Spratt (2013) showed how newly educated teachers with insight into relational thinking better developed an inclusive pedagogy that took into account individual student and classroom diversity.

## Bridging ESD and IE for new teachers in the Arctic

So how do we strengthen the bridge between the two areas of ESD and IE, for greater connection between Arctic communities and the teacher education programs that prepare teachers to join schools in those communities? We suggest both a theoretical and practical way forward for teacher education programs to better prepare teachers for teaching in the Arctic.

Before continuing, we should provide the caveat that it is not possible to predict where teachers for schools in the Arctic are from or even where they receive teacher training. There are teacher education programs in Northern Norway (Nord University, Sámi University of Applied Sciences, and UiT – The Arctic University of Norway), and Sweden's northern regions (Luleå and Umeå Universities) but students who attend these programs do not necessarily come from the Arctic, nor is it guaranteed that they will remain there upon receiving teaching qualifications. Teacher training programs were established in the Nordic north over 200 years ago with the rationale that educating people where they live helps to ensure they stay in the communities in which they grow up (Willumsen, 2014). A recent report from Statistics Norway (2022) suggests establishing teacher education opportunities in the Arctic has increased the number of newly qualified teachers coming from the region. The report reveals that 57% of student teachers in Northern Norway come from the region, and that 71% of new teachers in the Arctic also report they are from the region (Statistics Norway, 2022). While we focus on Arctic programs in this article, the suggestions we propose in what follows are for all Norwegian and Swedish teacher education programs.

The theory of Practice Architectures (TPA) developed by Kemmis, Wilkinson et al. (2014) could offer a useful theoretical lens to begin with. The TPA emphasizes practices as social phenomena, and where practices are shaped by combinations of cultural-discursive, material-economic and social political arrangements that together form 'practice architectures' (or conditions of possibility). Practice architectures enable and constrain how practices unfold in a given site (Kemmis, Wilkinson et al., 2014). As with other practice theories and social learning theories, TPA considers that learning in any context is never a solitary affair but rather a shared, communal and intersubjective thing that is influenced and formed by local histories. And although TPA emphasizes engagement with different learning practices socially, the theory ultimately questions 'what people do in a particular place and time' (Kemmis & Smith, 2009, p. 13), and the social practices and learning paths that are available for people. The availability or opportunities for learning about ESD and IE in schools can be viewed as aligned with the capabilities approach, and TPA offers ways for teachers to identify learning opportunities. This framework also offers awareness and subsequent possibilities to include transgressive learning and inclusive pedagogies in new teachers' repertoires.

In TPA there is always an emphasis in, and on, community thus it is important for new teachers entering Arctic communities to have an expanded understanding of the term community. On the one hand, community refers to the school communities in which the schools are located and are inclusive of multiple stakeholders (for example school students, their families, teachers, volunteers and neighbors). On the other hand, the term 'community' refers to the community of learning and action (COLA) at each site. This later understanding of community, akin to the Communities of Practice notion outlined by Lave and Wenger (1991), is made up of people who participate in situated learning practices. Where the COLA may include school stakeholders it is not limited to them. New teachers must be prepared to broaden their understanding of the situated learning practices of all community members and recognize the importance of learning about and engaging with communities that goes above mere consultation (Carlsson & Sanders, 2008). By prioritizing meaningful community-based participatory action in the areas of ESD and IE schools and teachers can benefit from the notion of relational agency, a process of creating and participating in purposeful practice with others that recognizes and accesses the resources that all stakeholders bring to bear, as they interpret and respond to an object (Edwards, 2005, p. 172). There is a long tradition of action research where schools can be seen as important foundation sites for COLAs throughout the Nordics (see for example Eikeland, 2012; Kemmis, 2014; Olin, 2008; Rönnerman, 2003; Rönnerman et al., 2004; Rönnerman et al., 2008; Salo & Rönnerman, 2014; Stjernström et al., 2006)).

We suggest that teacher education programs give greater consideration to action research that is underpinned by practice theories such as TPA. Even when research and development work is a mandatory component of initial teacher education, as it is in Norway and Sweden (see for example Alvunger & Wahlström, 2018; Bergmark, 2020; Hallsén, 2013; Munthe & Rogne, 2015), the foci of most of the research undertaken by student teachers tends toward desktop and literature review-type studies with interview-based studies being the most common type of participatory research conducted (Forsberg, 2012). We suggest that greater emphasis be placed on practice theories and *action research* in teacher education programs to enable new teachers entering Arctic communities a greater understanding of the communities themselves, and highlight the importance of ESD and IE. Action research is a process which involves a systematic improvement of

practices through iterative analysis, design, development and implementation based on collaboration between researchers and practitioners in real situations (Kemmis, McTaggart & Nixon, 2014). Since action research is especially engaged with developing local contextual knowledge using theory (Zuber-Skerritt, 2018) we argue that it is a method with which to embed transgressive learning and relational pedagogy in teacher education programs in order to effectively build a bridge between ESD and IE. We maintain that if teachers can conduct action research projects, they then have the capacity to engage local communities and to promote sustainable development in an inclusive manner.

An example from Northern Norway of such a collaboration between school teachers, a university and the local community was undertaken in the Lofotproject from the 1970s (Høgmo & Solstad, 1978). Teachers collaborated with the local community in an effort to make their teaching more relevant for the pupils. The project used action research methods that aimed for social change and local school development. More recently the Norwegian 'Relemast' project (Bjørndal et al., 2020) interviewed new teachers about how their research-based knowledge was applied in the first and second year of teaching. It was found that teachers who used action research methods for collecting data for their Bachelors theses saw value in this type of knowledge gathering with many continuing to use this method, even in the early years of teaching, and considered it an important aspect of their own professional development (Antonsen et al., 2022).

Collaborations between researchers, schools and local communities are a central aspect in action research which means that establishing and sustaining productive partnerships is essential. Even more specifically we suggest that critical participatory action research (CPAR) be taught to all new teachers. CPAR's 'strongest claim … is that participants in social and educational life can do research for themselves … participants have special access to how social and educational life and work are conducted in local sites by virtue of being "insiders"' (Kemmis, McTaggart & Nixon, 2014, pp. 4–5). However, there is what Kemmis, McTaggart and Nixon (2014) refer to as a peculiar

> dilemma [that] confronts anyone thinking of beginning a critical participatory action research initiative: you cannot decide what to research until you know who will be doing the research, and you cannot know who will be doing the research until you know what to research. (p. 149)

To mitigate this dilemma emphasis should be placed on participation in the public sphere and should begin with a conversation. These conversations should be conducted to discover a shared felt concern that participants believe is to be something that is (a) worth investigating and (b) worth acting on (Kemmis, McTaggart & Nixon 2014, p. 149). As teachers are so often viewed as the pillars of Arctic communities, it is so important that those who will become teachers understand 'Arctic pedagogies' (Määttä & Uusiautti, 2019) and are empowered to hold conversations, and fully engage with the role they play within the community.

This idea of CPAR being embedded in teacher education, is obviously deeply embedded in SDG4 – Quality education, and concerns the quality education for a far wider group of people than just those in school. CPAR seeks opportunities that allow for learning to take place on an individual level for all members of a school community (not just the children who attend or the staff who work there), as well as creating opportunities for understanding how community can be cultivated. CPAR projects allow schools to be seen with a wider utility and as places of learning 'beyond text' and be places of co-researched community ambitions (Beebeejaun et al., 2014). Interactions and collaborations such as this can only

then feed Edwards (2005) notion of relational agency; the process of creating and participating in purposeful practice with others that recognizes and accesses the resources that all stakeholders bring to bear, as they interpret and respond to the object. Relational agency offers an enhanced version of personal agency and, as a capacity, it can be learnt (Edwards, 2005, p. 172) which when looking at preparing teachers for Arctic communities is crucial.

## Conclusion

In this theoretical article, we suggest possible ways that teacher education institutions can better prepare teachers to teach ESD and IE which, in turn, can help to create inclusive and sustainable self-determined Arctic communities. We suggest that teacher education programs should realign to place greater emphasis on concepts such as ´just sustainabilities' (Agyeman, 2013), transgressive learning (Lotz-Sisitka et al., 2015), the capabilities approach (Sen, 2009) and relational thinking in inclusive pedagogy (Florian et al., 2017) in order to bridge the two domains of education for sustainable development (ESD) and inclusive education (IE) more holistically and centrally.

However, a more serious placing of theoretical notions such as 'just sustainabilities', 'transgressive learning', relational thinking and inclusive pedagogies, while important and recommended, is not enough for new teachers and the students they serve. What Arctic communities need for the education of young people in current times is true collaboration with schools and teacher education programs. We suggest that teacher education programs are uniquely positioned to train and develop teachers that are confident and willing to engage in this kind of collaborative partnership.

It is important to remember that even if we get better schooling in Arctic communities, we have to acknowledge that problems of sustainability and inequality are in fact systemic, and mostly colonial problems. Further research could include working on sustainability, inclusion and anti-racism with elected parliamentary representatives in Sweden and Norway, that might create much more change. We suggest that further empirical research that investigates the viability of using CPAR more frequently and systematically in teacher education programs as the bridge between ESD and IE is needed. One way is to better prepare new teachers to engage in critical participatory action research that empowers them to collaborate, and encourage teaching and learning approaches, that draw upon the rich local knowledge about the environment and cultures that exists in Arctic communities.

## Disclosure statement

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## References

Agyeman, J. (2007). Communicating "just sustainability". *Environmental Communication*, *1*(2), 119–122. https://doi.org/10.1080/17524030701715318

Agyeman, J. (2013). *Introducing just sustainabilities: Policy, planning, and practice*. Zed Books Ltd.

Agyeman, J., Bullard, R. D., & Evans, B. (2003). *Just sustainabilities: Development in an unequal world*. MIT Press.

Alvunger, D., & Wahlström, N. (2018). Research-based teacher education? Exploring the meaning potentials of Swedish teacher education. *Teachers and Teaching*, *24*(4), 332–349. https://doi.org/10.1080/13540602.2017.1403315

Antonsen, Y., Maxwell, G., Bjørndal, K. E. W., & Jakhelln, R. (2020). 'Det er et kjemperart system!' – spesialpedagogikk, tilpasset opplæring og nyutdannede læreres kompetanse. *Acta Didactica Norden*, *14*(2), 1–20. https://doi.org/10.5617/adno.7918

Antonsen, Y., Thunberg, O. A., & Andreassen, S.-E. (2022). Aksjonslæring som grunnlag for utvikling av lærerstudenters U-kompetanse. *Nordisk tidsskrift for utdanning og praksis*. https://doi.org/10.23865/up.v16.3279

Aspelin, J. (2014). Beyond individualised teaching. *Education Inquiry*, *5*(2), Article 23926. https://doi.org/10.3402/edui.v5.23926

Beebeejaun, Y., Durose, C., Rees, J., Richardson, J., & Richardson, L. (2014). 'Beyond text': Exploring ethos and method in co-producing research with communities. *Community Development Journal*, *49*(1), 37–53. https://doi.org/10.1093/cdj/bst008

Bergmark, U. (2020). The role of action research in teachers' efforts to develop research-based education in Sweden: Intentions, outcomes, and prerequisite conditions. *Educational Action Research*. https://doi.org/10.1080/09650792.2020.1847155

Bjørndal, K. E. W., Antonsen, Y., & Jakhelln, R. (2020). FoU-kompetansen til nyutdannede grunnskolelærere – grunnlag for skoleutvikling? *Acta Didactica Norden*, *14*(2), 20 sider. https://doi.org/10.5617/adno.7917

Carlsson, M., & Sanders, D. (2008). School councils as an arena for pupils' participation in collaborative environmental education projects. In A. Reid, B. B. Jensen, J. Nikel, & V. Simovska (Eds.), *Participation and learning: Perspectives on education and the environment, health and sustainability* (pp. 321–337). Springer Netherlands. https://doi.org/10.1007/978-1-4020-6416-6_20

Dalkilic, M., & Vadeboncoeur, J. A. (2016). Re-framing inclusive education through the capability approach: An elaboration of the model of relational inclusion. *Global Education Review*, *3*(3), 122–137. Retrieved from https://ger.mercy.edu/index.php/ger/article/view/212.

Edwards, A. (2005). Let's get beyond community and practice: The many meanings of learning by participating. *The Curriculum Journal*, *16*(1), 49–65. https://doi.org/10.1080/0958517042000336809

Eikeland, O. (2012). Action research-applied research, intervention research, collaborative research, practitioner research, or praxis research? *International Journal of Action Research*, *8*(1), 9–44. Retrieved from https://www.proquest.com/scholarly-journals/action-research-applied-intervention/docview/931477688/se-2.

Evans, N. (2019). Teacher education and education for sustainability. In *Learning to embed sustainability in teacher education* (pp. 7–21). Springer. https://doi.org/10.1007/978-981-13-9536-9_2

Evans, N., Tomas, L., & Woods, C. (2016). Impact of sustainability pedagogies on pre-service teachers' self-efficacy. *Journal of Education for Sustainable Development*, *10*(2), 243–261. https://doi.org/10.1177/0973408216650953

Florian, L., & Black-Hawkins, K. (2011). Exploring inclusive pedagogy. *British Educational Research Journal*, *37*(5), 813–828. https://doi.org/10.1080/01411926.2010.501096

Florian, L., Hawkins, K. B., & Rouse, M. (2017). *Achievement and inclusion in schools*. Routledge.

Florian, L., & Spratt, J. (2013). Enacting inclusion: A framework for interrogating inclusive practice. *European Journal of Special Needs Education*, *28*(2), 119–135. https://doi.org/10.1080/08856257.2013.778111

Forsberg, E. (2012). Formation of links to research through thesis writing: The case of the Swedish teacher education. *Paideia*, *50*, 71–102.

Göransson, K., & Nilholm, C. (2014). Conceptual diversities and empirical shortcomings – a critical analysis of research on inclusive education. *European Journal of Special Needs Education*, *29*(3), 265–280. https://doi.org/10.1080/08856257.2014.933545

Hallsén, S. (2013). *Lärarutbildning i skolans tjänst? En policyanalys av statliga argument för förändring* [Teacher education in the service of school? A policy analysis of state arguments for change] (p. 133). Acta Universitatis Upsaliensis [Uppsala Studies in Education].

Haug, P. (2017). Understanding inclusive education: Ideals and reality. *Scandinavian Journal of Disability Research*, *19*(3), 206–217. https://doi.org/10.1080/15017419.2016.122477

Høgmo, A., & Solstad, K. J. (1978). The Lofoten project. Towards a relevant education. *Scandinavian Journal of Educational Research*, *22*(1), 11–45. https://doi.org/10.1080/0031383780220102

Huckle, J., & Wals, A. E. J. (2015). The UN decade of education for sustainable development: Business as usual in the end. *Environmental Education Research*, *21*(3), 491–505. https://doi.org/10.1080/13504622.2015.1011084

Kemmis, S. (2014). Reflections on how the theory of practice architectures is being used in the Nordic context. In *Lost in practice: Transforming Nordic educational action research* (pp. 205–217). Brill Sense.

Kemmis, S., McTaggart, R., & Nixon, R. (2014). The action research planner: Doing critical participatory action research. In *The action research planner: Doing critical participatory action research*. Springer. https://doi.org/10.1007/978-981-4560-67-2

Kemmis, S., & Smith, T. J. (2009). Praxis and praxis development. In S. Kemmis & T. J. Smith (Eds.), *Enabling praxis: Challenges for education* (pp. 1–13). Brill | Sense. https://doi.org/https://doi.org/10.1163/9789087903275_002

Kemmis, S., Wilkinson, J., Edwards-Groves, C., Hardy, I., Grootenboer, P., & Bristol, L. (2014). *Changing practices, changing education*. Springer Science & Business Media.

Kopnina, H., & Cherniak, B. (2015). Cultivating a value for non-human interests through the convergence of animal welfare, animal rights, and deep ecology in environmental education. *Education Sciences*, *5*(4), 363–379. https://doi.org/10.3390/educsci5040363

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.

Lotz-Sisitka, H., Wals, A. E. J., Kronlid, D., & McGarry, D. (2015). Transformative, transgressive social learning: Rethinking higher education pedagogy in times of systemic global dysfunction. In *Current opinion in environmental sustainability* (Vol. 16, pp. 73–80). Elsevier B.V. https://doi.org/10.1016/j.cosust.2015.07.018

Määttä, K., & Uusiautti, S. (2019). Arctic education in the future. In S. Uusiautti & N. Yeasmin (Eds.), *Human migration in the Arctic*. Palgrave Macmillan. https://doi.org/10.1007/978-981-13-6561-4_9

Maxwell, G. R., & Bakke, J. (2019). Schooling for everyone: Norway's adapted approach to education for everyone. In M. C. Beaton, D. B. Hirshberg, G. R. Maxwell, & J. Spratt (Eds.), *Including the north: A comparative study of the policies on inclusion and equity in the circumpolar north*. Lapin yliopisto. http://hdl.handle.net/11374/2288.

Mayer-Smith, J., Bartosh, O., & Peterat, L. (2007). Teaming children and elders to grow food and environmental consciousness. *Applied Environmental Education & Communication*, *6*(1), 77–85. https://doi.org/10.1080/15330150701319529

Mezirow, J. (2000). *Learning as transformation: Critical perspectives on a theory in progress. The Jossey-Bass higher and adult education series*. Jossey-Bass Publishers. https://eric.ed.gov/?id=ED448301

Munthe, E., & Rogne, M. (2015). Research based teacher education. *Teaching and Teacher Education*, *46*, 17–24. https://doi.org/10.1016/j.tate.2014.10.006

Nussbaum, M. C. (2003). Capabilities as fundamental entitlements: Sen and social justice. *Feminist Economics*, *9*(2–3), 33–59. https://doi.org/10.1080/1354570022000077926

Olin, A. (2008). Understanding school change: When reform meets tradition. In Karin Rönnerman, Eli Moksnes Furu, & Petri Salo (Eds.), *Nurturing praxis: Action Research in Partnerships between School and University in a Nordic Light* (pp. 57–74). Brill Sense.

Peters, M. A., & Wals, A. E. J. (2016). Transgressive learning in times of global systemic dysfunction: Interview with Arjen Wals. *Open Review of Educational Research*, *3*(1), 179–189. https://doi.org/10.1080/23265507.2016.1217166

Plutzer, E., McCaffrey, M., Hannah, A. L., Rosenau, J., Berbeco, M., & Reid, A. H. (2016). Climate confusion among U.S. teachers. *Science*, *351*(6274), 664–665. https://doi.org/10.1126/science.aab3907

Rahm, J. (2016). Stories of learning, identity, navigations and boundary crossings in STEM in non-dominant communities: New imaginaries for research and action. *Cultural Studies of Science Education*, *11*(1), 61–75. https://doi.org/10.1007/s11422-014-9627-7

Reindal, S. M. (2010). What is the purpose? Reflections on inclusion and special education from a capability perspective. *European Journal of Special Needs Education*, *25*(1), 1–12. https://doi.org/10.1080/08856250903450806

Reindal, S. M. (2016). Discussing inclusive education: An inquiry into different interpretations and a search for ethical aspects of inclusion using the capabilities approach. *European Journal of Special Needs Education*, *31*(1), 1–12. https://doi.org/10.1080/08856257.2015.1087123

Robeyns, I. (2005). The capability approach: A theoretical survey. *Journal of Human Development*, *6*(1), 93–117. https://doi.org/10.1080/146498805200034266

Rönnerman, K. (2003). Action research: Educational tools and the improvement of practice. *Educational Action Research*, *11*(1), 9–22. https://doi.org/10.1080/09650790300200206

Rönnerman, K., Furu, E. M., & Salo, P. (2008). *Nurturing praxis: Action research in partnerships between school and university in a Nordic light.* Brill.

Rönnerman, K., Tornberg, G., Axén, U., Bergström, K., Nyberg, E., Söderström, Å, Folkesson, L., Olin, A., Nylund, J., Eriksson, A., Westburg, L., & Berlin, J. (2004). *Aktionsforskning i praktiken: Erfarenheter och reflektioner.* Studentlitteratur.

Salo, P., & Rönnerman, K. (2014). The Nordic tradition of educational action research: In the light of practice architectures. In Karin Rönnerman & Petri Salo (Eds.), *Lost in practice: Transforming Nordic educational action research* (pp. 53–71). Brill.

Schnack, K. (2008). Participation, education, and democracy: Implications for environmental education, health education, and education for sustainable development. In A. Reid, B. B. Jensen, J. Nikel, & V. Simovska (Eds.), *Participation and learning: Perspectives on education and the environment, health and sustainability* (pp. 181–196). Springer. https://doi.org/10.1007/978-1-4020-6416-6_11

Schröder, L.-M. U., Wals, A. E. J., van Koppen, CSA(, & van Koppen, K. (2020). Analysing the state of student participation in two eco-schools using Engeström's second generation activity systems model. *Environmental Education Research*, *26*(8), 1088–1111. https://doi.org/10.1080/13504622.2020.1779186

Sen, A. (1985). Well-being, agency and freedom: The Dewey lectures 1984. *The Journal of Philosophy*, *82*(4), 169. https://doi.org/10.2307/2026184

Sen, A. (1999). *Development as freedom.* Knopf.

Sen, A. (2009). *The idea of justice.* Harvard University Press.

Short, M. E., & Engel, L. C. (2019). Sixty seconds above sixty degrees: Connecting Arctic and Non-Arctic classrooms in the age of climate change. In W. L. Filho & S. L. Hemstock (Eds.), *Climate change and the role of education* (pp. 419–434). Springer. https://doi.org/10.1007/978-3-030-32898-6_24

Skolverket. (2018). *Curriculum for the compulsory school, pre-school class and school-aged care.* Skolverket – The Swedish National Agency for Education.

Statistics Norway. (2022). *Bosetting etter endt utdanning. En kartlegging av bosettingsmønster etter endt barnehagelærer-, lærer-, sykepleier-, sosialarbeider-, psykologi- og medisinutdanning* [Settlement after graduation. A survey of settlement patterns after finishing kindergarten teacher, teacher, nurse, social worker, psychology and medical education]. https://www.ssb.no/utdanning/hoyere-utdanning/artikler/bosetting-etter-endt-utdanning/_/attachment/inline/86f3692d-280e-4eec-9818-01a8526b4139:eb34b9fb8123a6e5e0967cf8cd6034135a3a851b/RAPP2022-09.pdf

Stjernström, E., Lund, T., & Olin, A. (2006). Critical distance–essential closeness. Local research, global community: Action research for a new century. In: Nicole Mockler (Ed.), *Local Research, Global Community: Action Research for a new Century. The Collaborative Action Research Network, Bulletin 11A*.

Straume, I. S. (2016). 'Norge ligger på dette området langt fremme i forhold til de fleste land': utdanning for bærekraftig utvikling i norge og sverige. *Nordisk Tidsskrift for Pedagogikk Og Kritikk*, *2*(3). https://doi.org/10.17585/ntpk.v2.282

Tassone, V. C., O'Mahony, C., McKenna, E., Eppink, H. J., & Wals, A. E. J. (2018). (Re-)designing higher education curricula in times of systemic dysfunction: A responsible research and innovation perspective. *Higher Education*, *76*(2), 337–352. https://doi.org/10.1007/s10734-017-0211-4

Terzi, L. (2014). Reframing inclusive education: Educational equality as capability equality. *Cambridge Journal of Education*, *44*(4), 479–493. https://doi.org/10.1080/0305764X.2014.960911

UNESCO. (1994). *The Salamanca statement and framework for action on special needs education: Adopted by the world conference on special needs education; access and quality. Salamanca, Spain, 7–10 June* 1994.

UNESCO. (2020). *Global education monitoring report 2020 – inclusion and education: All means all* (p. 424). https://unesdoc.unesco.org/ark:/48223/pf0000373718.locale = en

Utdanningsdirektoratet. (2017). *Overordnet del – verdier og prinsipper for grunnopplæringen* (Utdanningsdirektoratet (Ed.)). https://www.udir.no/lk20/overordnet-del/

Utdanningsdirektoratet. (2019). *Læreplanen i norsk (NOR01-06).* (Utdanningsdirektoratet (Ed.)). http://data.udir.no/kl06/v201906/laereplaner-lk20/NOR01-06.pdf

Utdanningsdirektoratet. (2020). *Core curriculum – values and principles for primary and secondary education.* Utdanningsdirektoratet – The Norwegian Directorate for Education and Training. https://www.udir.no/lk20/overordnet-del/opplaringens-verdigrunnlag/

Wals, A. E. J., & Benavot, A. (2017). Can we meet the sustainability challenges? The role of education and lifelong learning. *European Journal of Education*, *52*(4), 404–413. https://doi.org/10.1111/ejed.12250

Willumsen, L. H. (2014). Trondenes seminarium: Et lærdomsmiljø grunnlegges. *Nordic Journal of Educational History*, *1*(1), 45–58. Retrieved from https://www.diva-portal.org/smash/get/diva2:1113687/FULLTEXT01.pdf.

Windsor, S. (2019). The ethics of teaching sustainability in SO. *SO-didaktik*, *8*, 8. https://issuu.com/so-didaktik/docs/nr_8_27.1_etik

Zuber-Skerritt, O. (2018). An educational framework for participatory action learning and action research (PALAR). *Educational Action Research*, *26*(4), 513–532. https://doi.org/10.1080/09650792.2018.1464939