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Sustainable education should include Indigenous knowledge

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Formal education systems rarely include the knowledge and skills of hunter-gatherer societies. This can lead to cultural erosion and knowledge decline. For education to be both high quality and sustainable, Indigenous knowledge should be recognized and valued.

The Nyae Nyae Conservancy in northeast Namibia is one of the few remaining places in the world where a contemporary hunter-gatherer community can still practice their traditional knowledge and skills. The Jul'hoansi (San) who live there are expert trackers, and they also rely upon a large variety of edible and medicinal plants. However, many in the Nyae Nyae community are concerned about loss of traditional knowledge among their children, and express feelings of grief related to the decline of their cultural practices. Recently, one Jul'hoan man expressed regret to us that he did not learn traditional hunting practices. His explanation for this was that he went to school instead.

The Jul'hoansi are not alone: this conundrum is faced by similar communities worldwide. Formal school systems, often bound by a narrow definition of what education is, generally do not recognize the validity and sophistication of Indigenous culture, language and knowledge. As we seek more sustainable ways to live, it is important to reflect on how we should view specialized environmental knowledge systems in relation to formal education.

Sustainable Development Goal (SDG) 4 aims for 'all girls and boys [to] complete free, equitable and quality primary and secondary education'. In our research with hunter-gatherer communities in the Global South, we see that participation in education often undermines Indigenous knowledge systems and cultural integrity. This happens through a lack of recognition of Indigenous skills, values, languages and ways of engaging with the world. Simultaneously, formal education can impose the cultures and languages of dominant global and national social groups. This can lead to assimilation — rather than inclusion — of individuals and communities, at the expense of their cultural integrity[1]. Here we consider the role of SDG 4 in the promotion or erosion of traditional knowledge systems.

Contemporary hunter-gatherers

We use the term 'hunter-gatherers' to refer to those societies whose traditional livelihood depends primarily on non-domesticated resources that are obtained directly from their natural environments, through hunting, gathering plants and other foods (such as fungi, insects, molluscs and honey), fishing or scavenging. Almost all hunter-gatherers today rely on mixed subsistence strategies. However, most continue to strongly identify with their traditional knowledge and skills, and to practice them as much as possible.

Jul'hoan hunters traditionally used small arrows such as these, tipped with poison, to hunt; today this skill, which requires highly sophisticated environmental knowledge, is declining in the face of land loss, hunting restrictions and participation in formal education.

Globally, hunter-gatherers comprise approximately 10 million people; this is roughly 2% of Indigenous peoples (who number approximately 476 million people) and about 0.12% of humans living today. Hunter-gatherers speak approximately 5% of human languages and represent a trove of cultural and linguistic diversity[2]. This human diversity is intimately connected with hotspots of our planet's biological diversity that they occupy and safeguard as central pillars to their life-worlds[3].

We know that Indigenous knowledge systems, which are encoded in Indigenous languages, are critical for addressing several rapidly accelerating global crises, including climate change[4], biodiversity loss[5] and food insecurity[6]. Indigenous knowledge systems and traditional educative practices are grounded in collective memory and environmental understanding. Unfortunately, these knowledge systems, the environments in which they occur, and their modes of transmission are under threat from many factors: land loss, denigration of Indigenous ways of life and assimilative state institutions — in particular, formal education.

Education in hunter-gatherer societies

Despite the great human diversity that they represent, hunter-gatherer groups do share some common characteristics: in particular, small-scale populations, egalitarian social structures and an emphasis on individual autonomy[7].

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Ethnographic accounts of Indigenous education in hunter-gatherer communities unanimously describe child-motivated learning that is characterized by cooperation rather than competition, often in the form of play rather than chores or work[8]. Children acquire subsistence and social skills through first-hand experience, intensive observations of others, practice and participation in adult activities, and learn from and alongside a diverse array of trusted social partners. By the time they reach 'middle childhood' – around 6 or 7 years old, a typical age for starting school – these children already have high levels of competence in many areas, including food procurement, tool use and environmental knowledge[9].

Importantly, in these societies the children are often custodians of particular aspects of ecological knowledge, which is transmitted horizontally – in other words, among children or adolescents in the same generation[10]. As with older adults, children are often not bound by the food taboos and prohibitions that apply to adults of reproductive age. As such, they have access to a broader range of wild foods, for which they hold the expertise and associated foraging methods. The many small rodents, birds, bats, insects, reptiles, fruits, nuts and tubers that children collect on their own constitute a safety net in times of food uncertainty. The effectiveness of this social learning process is also confirmed; neuroscientists have long demonstrated that combining horizontal and vertical knowledge transmission improves brain development and produces an expanded pallet of skills[11].

A key feature of education in contemporary hunter-gatherer societies is child autonomy. Hunter-gatherer children are socialized from birth in an indulgent and noncoercive manner to make active decisions about their daily activities, including the people and places they want to engage with and learn from or about. Equally important, children have the freedom to withdraw and not participate in activities that they find irrelevant to their current interests[12]. An important question is whether this approach to learning is effective. Anthropologists working with San communities in the Kalahari recognized decades ago that the level of knowledge and skills that they need to learn and practice to become competent members of society is very high[13]. Recent research among hunter-gatherers has shown that their methods for achieving this level of learning have proved extremely successful[14].

Unfortunately, this success is all but invisible within formal education systems.

Hunter-gatherer children at school

The sort of education described above – context-based, autonomous, and with a large component of intragenerational and intergenerational transmission – and the skills and knowledge it produces do not fit within narrow definitions of education as 'schooling'. Teachers, who are almost always from other ethnic groups, tend to see children from these societies as 'completely uneducated' and 'wild', often lacking basic social, cognitive and behavioural traits and skills. The culture, knowledge, skills and languages that children bring with them to school are either unrecognized, or viewed as impediments to learning school-based knowledge.

Numerous studies report experiences of denigration (from teachers, school administrators, and often their peers from other ethnic groups), which erodes hunter-gatherer children's sense of identity, autonomy and self-worth[1,7]. Because hunter-gatherers often live in remote places, attending school usually involves leaving the community and staying in boarding schools, which can be traumatizing – and in some cases dangerous – for children, and can negatively affect their mental health.

Ultimately, as more hunter-gatherer children are pushed into such schools, the result is decreasing transmission of traditional knowledge systems – often with little in return.

In other words, in such cases schooling leads to cultural erosion and a decline in knowledge, not only for hunter-gatherer individuals and communities, but also on a global scale. A 2021 report[15] published by the FAO (Food and Agriculture Organization of the United Nations), Alliance Bioversity International and CIAT (International Center for Tropical Agriculture) on Indigenous food systems identifies the antagonism between Indigenous education systems and formal schooling as one of the negative drivers that affects the sustainability of Indigenous food systems.

Target 4.7 of SDG 4 focuses upon education for sustainable development, which is associated with a host of other social benefits (including an appreciation for cultural diversity). It is widely recognized that Indigenous peoples, including hunter-gatherers, already practice sustainable lifestyles. However, Indigenous knowledge systems are not meaningfully incorporated in the growing number of initiatives and programmes that aim to provide education for all. Rather than promoting human rights, gender equality, peace and global citizenship (as promised by SDG 4), existing schools are all too often a source of maladaptation and trauma, and reproduce the structural violence that hunter-gatherers and other Indigenous peoples experience in almost every sphere of their interactions with state institutions.

Conclusion

Within global development discourse, school-based education is sacrosanct; it is very difficult to express concerns or critiques about its universal applicability. We wish to be clear that in questioning universal mass education, we do not deny the recognized success of global educational initiatives for some sectors of humanity. Indeed, some individuals from hunter-gatherer and other Indigenous groups succeed and go on to become important voices for their communities – we do not minimize the importance of these successes.

Furthermore, many hunter-gatherer individuals and communities are seeking access to skills provided by formal education, such as various types of literacy and language skills. Currently, to access these skills they must turn to institutions that are damaging to their traditional knowledge base; that undermine their identity in harmful ways; and in which they rarely succeed. In such an environment, these communities are disenfranchised by education systems in multiple ways.

We draw attention to the damaging effect that narrow understandings of education can bring to these culturally diverse, small and scattered populations at the forefront of climate change and ecological degradation. If we do not engage in such critical discussions, we risk further undermining Indigenous cultures and their valuable ways of being and knowing – which are at the same time both incredibly robust, and also vulnerable.

Members of the Ju|'hoansi community almost unanimously confirm that an education firmly grounded in their traditional bush knowledge and practices will provide their children with the most opportunity in the area that they live in. Traditional knowledge and schooling are equally important, they say – we can't leave behind our culture.

The intent of this Comment is to spark this discussion, in part in the service of the right to self-determination for hunter-gatherers and other Indigenous groups. Our hope is also to broaden the understanding of what 'education' is – in the interest of our entire species and the sustainable futures of the other species with whom we share the planet.

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Author contributions

The members of the Research and Advocacy Group for Hunter Gatherer Education (HG-Edu) participated in a workshop in which the ideas advanced in this Comment were discussed, developed and confirmed. All have agreed to be listed as contributors.

Positionality statement. M.A. is originally from Germany, and is now based at the University of Tromsø. A.H.B. is originally from the USA, and is now based at the Max Planck Institute. V.C. is a Cholanaikkan community member. F.D. is a Jul'hoansi (San) community member. K.F. is a !Xun (San) community member. J.H. is originally from the USA, and is now based at the University of Tromsø. N.L. is originally from Israel and is affiliated with Haifa University, but based in Cambridge. B.M. is from Jambi, Indonesia, and is the founder of the Sokola Institute; she is currently pursuing her PhD at the University of Amsterdam. F.M. is from Sumba, Indonesia, and is currently pursuing her PhD at the University of Oulu. V.N. is originally from Bulgaria, and is now based at Oslo Metropolitan University. M.N. is a Kankanaey Igorot community member. E.N. is a Peruvian citizen, who is based in Heidelberg. S.S. passed away in November 2024. J.T. is a Tuwali Ifugao community member.

Competing interests

The authors declare no competing interests

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