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Harnessing Indigenous Knowledge for Sustainable Pastoralist Education Development in Ethiopia

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Abstract

There is a renewal of interest in the role of indigenous knowledge for marginalized societies after a long period of disregard for its contribution to sustainable development and educational relevance. The attention being given to indigenous knowledge is apparent in the role that it plays in human and animal health care, the use and management of natural resources, education, poverty alleviation, and community resilience and livelihoods. Recognizing and considering indigenous knowledge in development planning can also be viewed as a response to a given community's quest for the right of self-determination and the preservation of cultural identities. Research is generating more and more data showing the relevance of indigenous knowledge for the sustainable development of the pastoralist community. This article attempted to review and advocate the need to harness indigenous knowledge in the education system of the pastoralist community in Ethiopia. The study's methodology was a qualitative document review with critical reflections in view of understanding the role of indigenous knowledge for pastoralist development and the need to integrate it into the pastoralist education curriculum in Ethiopia. I concluded that if indigenous knowledge is to play its part in effecting sustainable development, there is a need for the systematic harnessing of informal and non-formal educational programs of the pastoralist community in Ethiopia.

Keywords: Formal Education, Endogenous development, Indigenous Knowledge, Pastoralists, Pastoralist Education, Sustainable Development.

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Introduction

In the emerging global knowledge economy, a country's ability to construct and organize knowledge capital is equally indispensable for sustainable development as access to physical and financial capital (Lane & Moorhead, 1995; Vaioleti, & Morrison, 2019). The basic component of any country's knowledge capital is its indigenous knowledge, which includes indigenous skills, experiences, and insights and is employed to maintain or improve livelihoods. It is a large body of knowledge and skills that has been built up outside the formal education system, deep-rooted in the culture, and typical to a given location (Schafer, 2004).

There is a restoration of inquisitiveness in indigenous knowledge after a long period of disregard for its contribution to sustainable development and educational relevance. It is confirmed that indigenous knowledge systems were a solid contributor to empowering the communities to transform themselves to meet their own cultural and economic aspirations (Vaioleti & Morrison, 2019). It is increasingly evident that the past approach to development, which neglected indigenous knowledge, was improbable to solve indigenous communities' problems (Lane & Moorhead, 1995, WB, 2004).

Hundreds of millions of disadvantaged people, like, mobile pastoralists, all over the world are still being barred from the mainstream development efforts, which have mostly been based on a top-down development model that ignores local beliefs and practices (Dyer, 2014). Contemporary researchers realised that indigenous knowledge should constitute the core development models in developing nations, which permitted its holders to survive in harmony with nature allowing them to use its sustainability (Rawat, 2010; Vaioleti & Morrison, 2019).

Therefore, it is encouraging to scrutinize that recently there has been a striking increase in interest in the role that indigenous knowledge can play in a truly participatory approach to sustainable development. This interest is reflected in many forays of activities found within communities recording their knowledge for use in their education system and inclusions within national development programs (Dei, 1995). Indigenous knowledge systems are now being considered a valuable national resource of indigenous communities like pastoralists. It has presented opportunities for designing development projects that come into sight from priority problems identified with a community and which build upon and authorize the community (Oba, 2012).

Despite the growing acknowledgment of the value of indigenous knowledge for the sustainable development of pastoralists as indigenous communities, it has not been widely integrated into the formal and non-formal education, research, and development process. Educational institutions are not alert enough to harness

indigenous knowledge in the education systems (Altback, 1993). As a result, interventions and programs in formal and non-formal education settings tend to be based on an accepted body of knowledge built on western experience and practice on one hand and directly replicated from the dominant sedentarised society on the other (Teasdale & Rhea, 2000; Richards, 2001).

Education programs that promote indigenous knowledge sustain lifestyles andmake development sustainable. It will further enhance the critical thinking and problem-solving skills of an indigenous community (UNESCO, 2011). Education curriculum with relevant indigenous knowledge is a critical factor in fostering marginalized societies that have the potential to reduce poverty, and promote sustainable development (Niamir, 1998; Dyer, 2014).

Therefore, this paper attempted to review the concept of indigenous knowledge in the pastoralist context, education and sustainable development, the role of pastoralist indigenous knowledge in sustainable development, and the need to integrate indigenous knowledge into the education system of the pastoralist community; the latter is assumed to have relevance to produce a relevant and attractive curriculum which can ensure the Ethiopian pastoralist education development.

Methods

The study has employed a qualitative document review with critical reflections because of understanding the role of indigenous knowledge for pastoralist development and the need to integrate it into the pastoralist education curriculum in Ethiopia. This paper follows specific qualitative research approaches of document analysis, mainly involving skimming, readings, and interpretations. The iterative process of document review combines both content analysis and thematic analysis. More than hundred previous research findings were intensively gathered, screened, and reviewed to elicit meaning, understand and develop empirical knowledge of the issues under investigation.

According to Neuman (2007), a review of documents is conducted as a qualitative research approach based on the assumption that we learn from accumulated knowledge and build on what others have done. As a qualitative research method, document analysis is particularly applicable to qualitative - intensive studies producing detailed descriptions of a single phenomenon, even organizations or programs. This review tried to address pastoralist indigenous knowledge for development, pastoralist education for sustainable development, and the need to incorporate pastoralist indigenous knowledge for pastoralist education development in Ethiopia.

Conceptualizing indigenous knowledge

For several decades, definitions and meanings of indigenous knowledge have been the subject of disputes and discussions. Even though Indigenous knowledge is many and diverse, we can still find some common threads that bind them together, and frequently used definitions. For example, Sillitoe defines indigenous knowledge as the form of knowledge that helps society make decisions about activities, such as agriculture and education that are acceptable to their ways of life (Sillitoe, 2000).

Indigenous knowledge is knowledge produced in specific historical and cultural contexts and is typically not generated by asset of pre-specified procedures, and is orally passed down from one generation to the next (Semali, 1999; Kincleloe, 2008).To Oba (2012), indigenous knowledge is the information foundation for a society, which makes possible communication and decision making, which is vibrant and is constantly altered by testing and contact with external systems. It is the large body of knowledge and skills that has been developed outside the formal educational system (Oba, 2012).

The most frequently cited definition of indigenous knowledge is Grenier Louise's (1998; 23): "the exclusive local knowledge, which is active within and developed around the specific conditions of human beings, original and typical to a particular area."Almost similarly Segger defines it as the knowledge, innovation, and practices of the indigenous local community, which have been gained, developed, and handed down from experiences evolved over centuries of development and adapted to the unique conditions of the local culture and environment and which encompasses practices of agriculture, health, environmental management (Segger, ,2015).

The definition by the Bruchac, and Segger perhaps, is a mix of these different facets. Indigenous knowledge refers to the large body of knowledge and skills that have been developed outside the formal education system (Segger, 2015; (Bruchac, 2014). Indigenous knowledge encompasses the culture and knowledge of local people, and their institutions provide functional frameworks, ideas,guiding principles, and practices that can, in turn, provide a foundation for effective endogenous development options. In short, indigenous knowledge is the knowledge used by local people to make a living in a particular environment (Bruchac, 2014).

Pastoralist's indigenous knowledge and sustainable developments

Sustainable development is a development that addresses the desires of the contemporary without compromising the ability of future generations to meet their

own needs. Its objective is to ensure the quality and standard of living of both present and future generations (Salinova, 2015). The fundamental nature of sustainable development commands a spectacular reduction of poverty, and hunger, and an enhanced development setup for future generations. Therefore, significant progress on this front is necessary to achieve meaningful, sustainable development. This, in turn, requires a more capable and competent knowledge system for increasing production and real economic growth rate without further damaging the environment by better knowing, harvesting, and using indigenous knowledge as an imperative development resource (UNESCO, 1999; Hamel, 2004; Salinova, 2015).

Knowledge is indispensable for understanding and promoting technical, economic, and social change in society. It is, therefore, fortunate to observe that interest in the role of indigenous knowledge in sustainable development is increasing nowadays. For decades, indigenous knowledge has been compared with scientific knowledge putting the latter always in a position of privilege compared to the former. Additionally, the literature on the topic has widely highlighted no clear divide between the two. Still, on the contrary, the integration of indigenous and scientific knowledge is a very important issue to consider for sustainable development (Bruchac, 2014).

Indigenous knowledge can contribute to improving development strategies in several ways. It helps to identify gainful and sustainable mechanisms for poverty alleviation that are locally convenient and locally meaningful. It can also help to identify inventive pathways to sustainable human development that augment indigenous communities like pastoralists and their environments (UNESCO, 1999; Vaioleti & Morrison, 2019). There is a progressive acknowledgment that huge indigenous knowledge in biodiversity, environmental management, and ecological knowledge is accumulated in the indigenous community globally and that indigenous knowledge and sustainable development are closely associated (Claxton, 2010).

Pastoralists are part of the society who primarily live and derive most of their food source and income from raising domestic livestock (Bruk, 2002; Morton, 2010). In short, pastoralists are people who live and derive most of their food source and income from raising domestic livestock, and moving from place to place in search of pasture and water (Ezeomah, 1998; Morton, 2010). Pastoralists are a collective of several hundred million livestock keepers distributed all over the world, which mobility characterizes them. These groups differ from the settled or sedentary population, living in villages, towns, and cities, tied to the fixed location by agriculture, employment, housing, and social and cultural factors (FAO, 2010).

In many countries of Africa, pastoralists live in parts of the countries that hold potential promise for development. Pastoralists possess a large number of animals available in African countries (De Haan, 2016). Pastoralists in Africa are categorized as disadvantaged and hard to reach the population in terms of social service provisions (Carhill & Peart, 2005). They adapted to a system defined as marginal, underdeveloped, characterized by lack of peace and stability, poor infrastructure, unrepresented in socio-economic and political activities, and marginalized in social service provisions, like education and health (Anand, 2014). Thus, though the most vulnerable, pastoralists, their animals, and the lands they control are potential resources for the African countries (Kratli, 2000). One of their possible resources is their ancient indigenous knowledge (Claxton, 2010). Indigenous knowledge often is the only benefit pastoralists control and certainly one with which they are very identifiable. It is also a vital element of the social capital of the poor and constitutes their main benefit in their attempt to gain control of their own lives (Gorjestani, 2000).

Utilizing indigenous knowledge helps increase the sustainability of development efforts because the indigenous knowledge integration process provides for mutual learning and adaption, contributing to the local communities' empowerment, which are the core objectives of most development efforts. Moreover, since efficiency, effectiveness, and sustainability are determinants of the quality of development work, harnessing indigenous knowledge in the education system has contributed to development efforts (Berekes, 1999; Dyer, 2014).

Therefore, the forerunning contentions depict that full recognition of indigenous knowledge is central to sustainable and equitable development. Furthermore, if a productive structure based on the satisfaction of basic human needs and collective rather than individual consumption is concomitant with sustainable development, indigenous knowledge must be recognized and reinforced in development issues. Moreover, if we are to achieve a full potential participatory approach to sustainable development, there must be greater recognition of the immense values of indigenous knowledge for development and educational activities in the contexts of indigenous communities like pastoralists.

Although it has been recognized that the preservation and protection of indigenous people and their knowledge is a means to achieving sustainable development, much still needs to be done at the policy and development of education programming levels. The trend is that indigenous knowledge is being abandoned by the African elite who resort to alien and "modern" but unsustainable development values and practices (ASM, 2010).

For many centuries, indigenous knowledge has been the only source of information for pastoralist societies (Dinucci & Fre, 2003). Such knowledge is developed on experiential learning, advances continually, and is pooled in traditional communication processes according to the characteristics of pastoralist production practices, the culture, and the environment (Dinucci & Fre, 2003). Pastoralists' indigenous knowledge deals with ecology and social organization that leads to rangeland-management schemes and mechanisms which are proper to deal with the unreliable rainfall in African dry lands. Herd mobility is traditionally practiced knowledge of pastoralists as the key strategy to use the sprinkled rangeland resources on a large scale (Homann & Rischkowsky, 2005). Many African pastoralists also establish ranges of reserves for grazing grounds in times of emergency, which function to sustain the ecosystem and help the pastoralists to recover after drought situations (Niamir, 1998; Dong, 2016).

Development planners, extensions and research services focusing on agricultural production have often neglected indigenous pastoralist knowledge. Only recently, it has been well acknowledged that to promote sustainable development for pastoralists, since it is necessary to address their indigenous knowledge adequately (Dinucci & Fre, 2003). Sustainable development has emphasized different kinds of indigenous pastoralist knowledge, such as animal production, animal husbandry, ethnoveterinary knowledge and practice, and ethno-botanic knowledge (Dinucci & Fre, 2003).

Indigenous knowledge in the pastoralist context is embedded in a dynamic system in which spirituality, kinship, local politics, and other factors are tied together and influenced. The interrelation amongst these aspects should be considered when examining a particular part of the indigenous knowledge system since it has many positive aspects. Moreover, incorporating indigenous knowledge into pastoralist development projects, and improving the curricula along that line can contribute to local empowerment and provide valuable input for alternative natural resource management strategies and usages (UNESCO, 2017).

Furthermore, to uphold sustainable development that is culturally suitable to traditional societies, it is essential to improve the indigenous knowledge and information systems that permit the continued existence and renewal of culture, identity, and societal wealth and are critical generators of innovation. Given the significance of indigenous knowledge, pastoralists' management of their knowledge may therefore play a vital role in ensuring sustainable development for the pastoralist community. Using indigenous knowledge could also lead to increased contribution of pastoralists in local and national development projects and could be a foundation for supporting grassroots institutions (such as herders'

associations and groups that can support technical and social interventions (Rebello, 2003).

New insights further reveal that sustainable development interventions have failed to induce pastoralist people to participate because of the absence of instruments and mechanisms that enable them to use their knowledge. At the same time, they give valuable insights into how people use their own locally generated knowledge to change and improve their livelihood (Dinucci & Fre, 2003, Dyer, 2011).

Recently, there has been a dramatic increase in interest in the role that indigenous knowledge can play in a truly participatory approach to the sustainable development of pastoralist society. Understanding indigenous knowledge enables creating an environment conducive to participatory processes, which seek to bridge the divide between local and scientific knowledge. Recognizing and considering indigenous knowledge in sustainable development can also be viewed as a response to marginalized communities like pastoralists' quest for the right to self-determination concerning the preservation of cultural identity and sustainable development (Rebello, 2003: UNESCO, 2017).

Pastoralist education for sustainable development

Education for sustainable development is a concept that goes far beyond environmental education. It is the educational process of achieving the three pillars of human development: economic growth, social development, and environmental protection in an inclusive, equitable, and secure manner. It thus includes education for poverty alleviation, human rights, gender equity, cultural diversity, and many more (Dyer, 2014). Education is designed to make people aware of the idea of sustainable development and encourage people to take actions aimed at balancing the interest of the present and the future (Salinova, 2015; Dyer, 2011).

Therefore, making sustainable development real and developing individuals and societies' capacities to work for a sustainable future is essentially an educational enterprise (Rebello, 2003). Education is recognized as a tool for addressing important questions such as rural development, healthcare and community involvement, HIV/AIDS, the environment, and broader ethical and legal issues such as human values and human rights. People worldwide recognize that current economic development trends aren't sustainable and that public awareness, education, and training are keys to moving society towards sustainability (Rebello, 2003; Salinova, 2015).

Education is central to achieving sustainable development, which can shape the world tomorrow, equipping individuals and societies with the skills,

perspectives, knowledge, and values to live sustainably (UNESCO, 2008). Although there is no universal model of education for sustainable development, there can and should be overall agreement on the concept of education for sustainable development and there will be nuanced differences according to local contexts, priorities, and approaches.

Education for sustainable development is a dynamic concept that utilizes public awareness, education, and training to create or enhance an understanding of the linkages among the issues of sustainable development and to develop the knowledge, skills, perspectives, and values, which will empower people of all ages to assume responsibility for creating and enjoying a sustainable future (Rebello, 2003).

There is also a clear common ground between ESD (Education for Sustainable Development), Education for All (EFA), and United Nations Literacy Development (UNLD). Considered from any of the three initiatives, education is a central strategy for sustainable development. They all emphasize the local context, bridging the school and community divide as well as the partnership with civil society. It has also been recognized that uniform and centrally designed curricula and courses tend not to be sensitive to local circumstances, needs, and historical precedence of the society (Teasdale & Rhea, 2000; Richards, 2001, Bruchac, 2014).When established, formal education may be exclusionary of those different cultures and those not accustomed to a methodology of conventional science. This was what gave rise to Gandhi's "Basic Education model," which assumes a major pillar in the move to self-rule (Richards, 2001), and "*Education for self-reliance"* as undertaken by Nyerere in post-colonial Tanzania (Semali, 1999).

The current paradigm shift towards promoting education for sustainable development gravitates toward alternative approaches to school curricula in Sub-Saharan Africa. It is argued that solutions to problems that currently plague the continent must proceed from an understanding of local capacities, such as the role of indigenous knowledge in promoting sustainable development. This can be achieved by integrating indigenous knowledge into the education system to address some of the knowledge deficiencies for development currently formulated from the western perspective (Teasdale & Rhea, 2000; Oba, 2012).

There is now a growing consensus that some of the solutions to problems plaguing African societies and communities must proceed from understanding the dynamics within the local contexts. Such dynamics include indigenous knowledge and practices in the development processes (Dei, 2002; UNESCO, 2006).

The strategy requires adopting an endogenous approach to education that involves the contextualization of the school curriculum by integrating indigenous

knowledge with other relevant and useful knowledge into formal education. This is summed up in a UNESCO (2006) document as follows; "*it is especially an attempt to promote education for sustainable development of African societies where cultures and ways of life are balanced with global and International pressures and demands*" (p. 6). Sustainable development goals can be achieved through education (Fayeh, 2016). Education is, therefore, acknowledged as being instrumental in harmonizing the different forms of knowledge bases and creating a social fabric for societies that can engender social, economic, and political sustainability.

Since the 1970s, a growing number of scholars and United Nations Organizations have turned their attention to exploring how indigenous knowledge and institutions could contribute to more culturally appropriate and sustainable development (Dei, 2002; Mwenda, 2003; Shiva, 2003; UNESCO, 2006). It has been realized that indigenous people are not only more aware of but also better able to identify their own needs than outside developers. Moreover, those needs are culturally defined as ways in which the survival of indigenous people depends significantly (Dei, 2002).

Dei emphasizes that "we need to call for locally defined models of sustainability in which it will prevail the realities of local peoples, with all their societal, cultural, political, spiritual, moral, and ecological goals and aspirations" (Die, 2002, p. 12). An endogenous approach to education is multifaceted and places environmental preservation practices as key to sustainable development, among other factors. Thus, communities can build their social and cultural capital to exercise their sovereignty in their development processes. The idea is to set up appropriate institutional spaces for communities and educators to guide socio-economic development through multiple forms of knowledge, including indigenous knowledge forms and pedagogies (Owuor, 2007).

Indigenous knowledge in formal education

Education in a definitional context can generally be thought of as the transmission of values and the accumulated knowledge of a society. Thus, it is essentially a societal instrument for expanding human knowledge (Eze, 2013). Though the use of indigenous knowledge is proven time and again, the formal education system has been considered inadequate and inappropriate conception of indigenous knowledge of the local community. Many of the concepts of indigenous knowledge are not recognized in the pastoralist community's formal and non-formal education system. Formal educational practices are based on the view that knowledge consists of a body of facts transferable through books and formal

instruction of western knowledge (Eze, 2013; Mato, 2015).

Formal education in the third world contributes to the demise of indigenous knowledge by commission and omission (UNESCO, 2017). In most third-world communities, the educational functions of traditional institutions have long been taken over by the state's school systems. As a result, pupils entering school are entering a new world, both physically and intellectually, a world that lies outside the traditional boundaries of their communities. In this situation, schooling may be said to undermine indigenous knowledge in three ways. Firstly, it fails to put forward indigenous knowledge as a practical subject matter for the learning process. Secondly, it limits the exposure of children to the local knowledge of their communities. Thirdly, it creates attitudes in children that militate against the acquisition of local knowledge (Smith & Peacock, 1995; UNESCO, 2017). At present, the school and the child's world have separated the inadequacies of educational practice (Dyer, 2014). The result is that the knowledge acquired by pupils is based on the subject matter, which is only marginally relevant to their real-world (UNESCO, 2017).

The demands of modern schooling in the third world are such that rural children do not remain in their communities long enough to acquire the knowledge available to them through traditional channels. They are in school for significant hours of the day, while in some cases they must leave their villages and go to live in the towns where the schools are located. As a result, indigenous knowledge is lost to succeeding generations of school-educated young people (Smith & Peacock, 1995, Srikantaiah, 2005).

Further, schooling tends to promote western knowledge and values at the expense of local knowledge and values. Among the factors identified as responsible for the westernization of the education system in Africa is the adaption of the foreign curriculum which usually lacks contextual relevance and devalues indigenous knowledge (UNESCO, 2009). As a result, young school leavers develop negative attitudes towards local knowledge, even for purposes of local activities. The cumulative effect will be creating future generations who may lack the most elementary and necessary understanding of their culture (Smith & Peacock, 1995, Srikantaiah, 2005; UNESCO, 2009).

Indigenous knowledge, along with western-based knowledge, helps to create development solutions that are culturally acceptable to the society being helped. In the past, such knowledge has been ignored and development solutions have been created that were not economically feasible or culturally acceptable for the society being aided. It is still one of the overlooked potentials for sustainable pastoralist development programs and missed agendas in pastoralists' education curriculum

and pedagogy (AIR, 2020).

Although this knowledge is essential, little seems to have been done to promote and utilize it. Neither has it been developed and documented to make relevant education and sustainable development of the pastoralist community. If indigenous knowledge is to play its part in enhancing sustainable development for pastoralists' community and making pastoralists' education relevant to the pastoralists' community, there is a need for the systematic harnessing of indigenous knowledge in the curriculum of pastoralist education (Stavenhagen, 2015; Dyer, 2014). To this effect, institutions and research efforts must be stepped up and the role of education and educational institutions is of paramount importance.

Pastoralism, pastoralist education, and indigenous knowledge in Ethiopia

Pastoralists constitute a large proportion of the Ethiopian population, at an estimated 12–15 million people, and they inhabit (60-65 percent) of the land areas of the country (MoE, 2017). Due to a long period of neglect under previous governments, pastoralist communities have historically had limited access to social services such as education and health. Basic development infrastructure, transport, and communication links with the rest of the country are relatively poorly developed (MoE, 2017). Providing appropriate education services to transhumant pastoralist people seems to be challenging and problematic. The top-down government approaches to education provision for pastoralists usually pay no attention to the views, opinions, indigenous knowledge, living conditions, and interests of pastoralist communities (Ahmed, 2017).

Moreover, a lack of consensus and common notions on the worth and meaning of education leads pastoralists to view modern education as a threat to their culture and ways of life. The established formal and informal curriculum of the school mostly reflects the values and traditions of the dominant sedentarized and urban dwellers, ignoring the age-old tradition and culture of pastoralist groups (Dyer & Ziyn, 2016).

The importance of education for pastoralists has been adequately documented in different kinds of literature (Anis, 2008, Kratli, & Dyer, 2009; Dyer, 2014). It serves as a springboard for social and economic changes. Moreover, education is regarded as a parcel of the modernization approach, and it has to do with altering pastoralists' conservative ways of life and acquainting them with knowledge and skills, which can transform them socially, economically, and politically (Dyer, 2014). Education can equip pastoralists against impoverishment and ultimately eradicates poverty by opening access to alternative livelihood options (Kratli & Dyer, 2009).

The Ethiopian government is committed to providing quality education for all, irrespective of race, religion, and geographic setting. It endorses the SDG (Sustainable Development Goal), which states to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all by 2030. Ethiopia respects the values of equality, particularly equality of educational opportunity for all. The country acknowledged that access to formal quality education is one of the rights of the indigenous people like pastoralists, given its importance in terms of their social, political, and economic aspirations.

Provision of education to pastoralist communities has been given special attention since the 1994 National Education and Training Policy, and Education Development Roadmap (2018), which spells out the government's concern to offer special support to pastoralists, who had been deprived of educational opportunities in the past. Under this policy umbrella, almost all the Education Sector Development Plans of the country mainstreamed education for pastoralists as a priority in all sub-sectors of the educational system. This sector focus was guided by a Pastoralist Education Strategy, developed in 2008, and 2016 to outline the specific challenges and opportunities pastoralist communities face and pinpoint strategies to promote primary and secondary education in the pastoralist areas of the country (Dyer & Ziyn, 2016).

Despite remarkable system expansion and gains in enrolment, educational participation is still far below the national average in the pastoralist areas. According to the recent MoE (2021) educational annual abstract, the primary education net enrolment rate (NER) for dominantly pastoralist areas of the country indicates that the Afar region (44.9%), and NER in the Somali region is (72%) while the national average is 95 Per cent (MoE, 2021). The typical driving factors that affect the educational participation of transhumant pastoralist children in education include mobility, conflict, child labour, early marriage, the irrelevance of curriculum, and belittling of the quality and value of education (AIR, 2020).

A situational analysis was made on the implementation of the 2008 strategy in four major pastoralist areas of the country. The analysis established that the formal and informal school curriculum lacks relevance to pastoralist livelihoods, indigenous knowledge, context, and development needs. Moreover, education is not playing a clearer and better-defined role within an integrated pastoralist development strategy, which results in irregular attendance and low enrolment of pastoralist children in all levels of education (Dyer & Ziyn, 2016).

Similarly, Dyer (2014) shows the case of pastoralist communities in Africa, in which formal education initiatives were implemented by people with no or little knowledge of pastoralists' traditional ways of living. Moreover, with the loss of

indigenous knowledge, indigenous students have higher degrees of illiteracy, poor school attendance, and poor academic achievement than the rest of the learners (Kratli & Dyer, 2006).

The Ethiopian government developed the National Pastoralist Education Strategy (2016) and designed a strategic objective to ensure that the curriculum is relevant to pastoralist livelihoods, indigenous knowledge, context, and development needs. A key issue and pitfall that pastoralist communities raise is the relevance and quality of the curriculum for their livelihood, which rarely reflects their social values, culture, indigenous knowledge, and social structure (Dyer & Ziyn, 2016).

Ethiopian pastoralists are indigenous people of Sub-Saharan Africa who have plenty of indigenous knowledge in human and animal health care, the use and management of natural resources, pastoralist development, education, poverty alleviation, and communities' resilience and livelihoods. Pastoralists have diverse forms of knowledge, which are rooted in their relationship with the environment, and cultural cohesion, which allowed these communities to maintain a sustainable use and management of natural resources, protect their environment and enhance their resilience (Magni, 2017). The rangeland management practices and experiences of Borena pastoralists, indigenous ecological knowledge of southern Ethiopian pastoralists, soil conservation knowledge of Afar pastoralists, and crossbreeding indigenous knowledge of Borena, Afar, and Somali pastoralists, are typical indicators of their local knowledge (Oba, 2012).

Ethno-veterinary and human pharmaceutical knowledge of the Afar, weather forecasting knowledge of Somali and Afar pastoralists, dry land and natural resource management knowledge, and skills of mining, smelting, and casting are still utilized in the pastoralist community. Conflict resolution strategies and pastoralist governance and democracy, climate change adaptation mechanisms, and ethno-botanical knowledge are some of the prominent traditional wisdom of Ethiopian pastoralists (Homann & Rischkowsky, 2008).

Studies have depicted that the irrelevance of the curriculum resulted in low interest in education and a high dropout rate among the pastoralist areas (Ziyn, 2010; AIR, 2020). As different research findings indicate, the school curriculum developed for sedentary people has no relevance to pastoralist people's livelihood in Ethiopia, which leads to cultural alienation (UNESCO, 2002; AIR, 2020).

One of the reasons is that the curriculum offered to pastoralist children follows the national standard and does not respond to their needs, culture, livelihoods, and aspirations. It does not transmit essential aspects of indigenous or local experts' knowledge and skills and is intricately linked to wider features of

pastoralists' indigenous social organizations and institutions. Moreover, it does not offer the children the necessary life and survival skills within their immediate environment (Dyer & Ziyn, 2016). The success of any education system and hence sustainable development depends not only on the nature of its aims but also on its content (Eze, 2013). As ADEA (2005) noted making curriculum content such as materials, concepts, illustrations, and environmental activities that pastoralists are familiar with and can relate to, has paramount value in making education interesting and understandable to students from pastoralist backgrounds.

In general, authors have submitted that for schools and curricula to positively respond to and make teaching and learning more culturally inclusive, there shall be a need for a paradigm shift in emphasizing the values of the students' home cultures and, consequently, the learners' prior knowledge, and indigenous societal knowledge, which the school curriculum should promote (Thaman, 2009).

The way forward

Ethiopian pastoralists are among the indigenous people who have plenty of local knowledge of diverse livelihood activities. Indigenous knowledge becomes a crucial part of indigenous peoples' lives as it presents the essential means of survival. This indigenous knowledge is a valuable natural resource, which has been overlooked in pastoralists' development efforts and education systems. It is a user-derived and not scientist-driven science, and its utilization with development efforts could provide long-term advantages that would complement and enhance the contributions of modern-day inventions.

The amalgamation of suitable indigenous knowledge systems into development programs has proven to contribute to efficiency, effectiveness, and sustainable development impacts. Yet, it is still one of the overlooked potentials for pastoralist sustainable development programs and missed content in the pastoralists' education curriculum and pedagogy. Although this knowledge is essential, little seems to have been done to promote and utilize it. Neither has it been developed and documented to make pastoralist education and sustainable development of the pastoralist community relevant.

Currently, the use and importance of indigenous knowledge in the pastoralists' development are assuming an important dimension. In addition, there has been a movement to affirm the significance of indigenous knowledge and wisdom in pastoralist education. Hence, pastoralists' indigenous knowledge cannot be ignored both in the development context and in the context of formal and non-formal education.

Integrating indigenous knowledge into the education curricula initiates

pastoralist learners to develop a sense of self-worth grounded in their authentic cultural systems of knowledge construction. Indigenous knowledge in education is important for providing various ways of knowing and integrating the people's knowledge into the modern education system as a basis for connecting what pastoralist students learn in an informal and non-formal school system with pastoralist life outside the school system. The process helps to restore a traditional sense in place while at the same time broadening and deepening the educational experiences for pastoralist students.

Reclaiming cultural identities rooted within the authentic pastoralists' indigenous knowledge has been perceived as a way forward to sedentary people-oriented school curricula; hence, it is imperative to make education more relevant and practical in addressing the needs of the pastoralist community in Ethiopia. To complement the integration of indigenous knowledge in pastoralists' education, it is important to inquire into educators' and teachers' perceptions of indigenous knowledge to understand their potential in developing suitable pedagogical approaches and materials for the execution of such curriculum reforms.

To this effect, there is a need to identify and document indigenous knowledge for sustainable development and strap up with the education system of pastoralists' areas. If pastoralists' indigenous knowledge is to play its part in effecting sustainable development, there is a need for the systematic harnessing of indigenous knowledge into the curriculum of pastoralist education, preserving and sharing of the data, institutions, and research efforts must be stepped up. In this regard, the role of education and research institutions, educational stakeholders, educators, policymakers, and practitioners in identifying, cataloguing, documenting, and validating indigenous knowledge for sustainable development is of critical importance.

Therefore, within the perspective of the concern of the government of Ethiopia to make education responsive to pastoralists' local contexts, there is much more expectation in fostering dialogue and creating partnerships to respond to society's needs by making the best out of the untapped natural resources - pastoralists indigenous knowledge- for sustainable development and sustainable educational development at the interface of scientific knowledge.

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