

Original Article

Climate Change Education through Narrative Inquiry

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Abstract

This article addresses Climate Change Education (CCE) and its interface with Indigenous knowledge. Specifically, I explore the potential for transformation towards more holistic climate change education that balances science and Indigenous knowledge. However, the study details the persistent focus of contemporary education on climate science without interfacing with Indigenous knowledge, cultural values, and associated practices that contribute to climate change resilience. This article tackles this gap and the requisite transformation in climate change education through narrative inquiry.

Keywords: *Indigenous knowledge. Cultural practices. Narrative inquiry. Climate change education. Transformation.*

Introduction

For more than a decade, I have worked with Indigenous peoples on climate change, aiming to connect the national and global levels to local realities. The government of Nepal officially recognizes 59 Indigenous peoples' groups with unique language, traditional knowledge, and cultural practices (NFDIN, 2002) along with 125 different caste and ethnic groups (CBS, 2012). Although I grew up in a Sherpa family, until I started working on the global climate change partnership programs, I was not aware of how customary institutions of Sherpa and other Indigenous peoples contribute to sustainable natural resource management, ecosystems, and biodiversity. This work introduced me to the cultural values of Indigenous peoples around the world and their critical role in climate change resilience. A study shows that Indigenous peoples represent 6.2 percent of the world population and safeguard 80% of the world's biodiversity and at least a quarter of the global land area (IPBES, 2019).

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Despite the agricultural practices that include Indigenous and local knowledge that contribute to overcoming the combined challenges of climate change, food security, biodiversity conservation, combating desertification and land degradation (IPCC, 2019) and contribution of Indigenous peoples to climate change adaptation and mitigation (IPCC, 2014) through their traditional knowledge and cultural practices, their cultural values and knowledge systems hardly find space in our school curriculum for Climate Change Education (CCE) in Nepal.

In the United Kingdom, emphasis has been given to the teachers' moral role in being socially critical and in providing a values-based education concerning the environment (Cotton, 2006). The learning process of teachers must be given due support if they are to play an effective role in CCE (Anderson, 2012). They have the potential to play an important role in bridging scientific and indigenous knowledge about mitigation and adaptation through teaching CCE (UNESCO, 2009). However, in the absence of the values and concept of Indigenous knowledge and cultural practices, effective CCE for children would be limited. Therefore, this paper presents the stories of school teachers while teaching and learning CCE at schools along with my own experience of working with Indigenous Peoples in the area of Climate Change. I explore the existing lack of attention to embedded Indigenous knowledge, social and cultural values as part of climate change resilience in climate change education for children in Nepal. Along with the beginning of modern education in Nepal in 1950, the continuation of discouraging indigenous language, knowledge, and cultural diversity in our education system has been a root cause of disappearing indigenous knowledge and cultural practices. Indigenous language has been a core foundation of their traditional knowledge and cultural practices for maintaining the ecosystem, biodiversity, and natural resources (Troster & Parrota, 2012). However, the essence of numerous studies highlighting the crucial role and contribution of Indigenous Peoples' knowledge and cultural practices to the protection of natural resources, biodiversity, ecosystem and climate change resilience are still not reflected in our education system.

The government of Nepal has prioritized CCE through integrating climate change concepts into the science curriculum for secondary level of education (Ministry of Science Technology and Environment [MSTE] & Asian Development Bank [ADB], 2012), as well as revision of the curriculum for Social Studies, Health, Environment and Population (Curriculum Development Center [CDC], 2014). However, the consideration of the global discourse on the integration of indigenous knowledge and cultural practices for sustainable natural resource management as a climate change solution is still to be incorporated. The provision of a local curriculum that comprises 20% of social studies opened prospects for some schools to include local practices of indigenous communities. This includes the ways they have been monitoring and managing natural resources and biodiversity. Also, it includes the ways they share experiences and stories with schoolchildren. Such examples provide seeds of hope for transformational changes in our education systems. Based on this provision, I was inspired to explore the stories of schoolteachers while learning and teaching CCE and see how they have interfaced science and indigenous knowledge systems while teaching and learning about climate change at schools.

Although there exists some flexibility in adjusting the local curriculum at schools in line with the social and cultural values of Indigenous Peoples, there has been a continued trend of seeking modern solutions to address climate change. Most often, the wealth of knowledge rooted in the Indigenous traditional values and cultural practices to deal with climate change are still overlooked. In the revised curriculum on CCE, the proportionate impact of climate change has gained widespread attention. Yet this attempt to increase awareness of climate change continues to emphasize climate science without acknowledging indigenous knowledge and cultural values of Indigenous Peoples and their contribution to climate change resilience

and adaptation. This represents a missed opportunity to link to local realities and opportunities for the younger generation to receive holistic education on climate change.

There has already been dialogue and discussion on the values of the indigenous knowledge and cultural practices at global discourse on climate change but its impacts on the implementation at the national level remain absent. Being aware of the global discourse on climate change and the need to mainstream the role of indigenous knowledge and cultural values as part of climate change solutions have led me to become more passionate about climate change concerns.

The study of the Intergovernmental Panel on Climate Change (IPCC) on the imperative role and contribution of Indigenous Peoples for climate change solutions has compelled the attention of the world while combating climate change impacts. The history of the United Nations Framework Convention on Climate Change (UNFCCC) stretches back to 1992. Yet it was not until 2015 that the Paris Agreement decision included the establishment of the Local Communities and Indigenous Peoples' Platform (LCIPP) in 2015 by the Conference of the Parties (COP 21). The LCIPP serves three functions: Knowledge, capacity building, climate change policy and action, and implementation of different activities within and outside the constituent bodies of UNFCCC. The LCIPP has opened the global forum on the prominent contributions of local communities and Indigenous Peoples' knowledge and experience while dealing with climate change concerns.

The collaboration of the platform with Action for Climate Empowerment (ACE) has also provided the importance of Indigenous Peoples' curriculum through formal and informal education (LCIP, 2020). ACE has been adopted by the UNFCCC to denote work under Article 6 of the convention in 1992 as well as Article 12 of the Paris Agreement in 2015 with the main goal to empower all members of society in climate action through education, training, public awareness, public participation, access to information and international cooperation (ACE, 2020). These are some of the key accomplishments in the recognition of Indigenous Peoples' knowledge systems and cultural values in the discourse of climate change at global level. Nevertheless, one needs to be mindful that there is no magic wand to convey the messages in one go. Instead, this involves collaborative efforts for awareness and capacity building of the relevant stakeholders, particularly the laws and policymakers to internalize the significance of balancing indigenous knowledge and science while teaching CCE at national and local levels.

Significance of Stories in Narrative Inquiry

Stories are significant as they are the reflection of the oral history of Indigenous Peoples. They are rooted in particular spaces, linking to traditional knowledge and cultural values. The purpose of this study was to explore how schoolteachers have been teaching CCE and interfacing Indigenous Peoples' knowledge, social and cultural values as well as sharing my own stories in the area of CC. To this end, I choose narrative inquiry as one of the suitable methodologies in the field of qualitative study.

Narrative inquiry is set in human stories of experience and provides researchers with a rich framework through which they can investigate the ways humans experience the world depicted through their stories (Webster & Mertova, 2007). I explored the schoolteachers' experiences and stories to see how they have been learning and teaching CCE and how they have been presenting the indigenous knowledge and local practices. Narrative inquiry is a reflexive and reflective methodology, and so I continuously inquired into the participants' experiences of past, present and future after each inquiry (Clandinin & Caine, 2012). This helped me to understand spaces where I would gain familiarity with the lived experience of schoolteachers of the past, present, and their hope for the future alongside their attitudes towards openness, reciprocity, and care. This facilitated me to build trust with my participants

and be more open to sharing their experiences and stories. I hoped for the study to advance CCE towards greater integration of the values and roles of indigenous knowledge and cultural practices, in line with norms that have emerged in global climate change policy discourse.

The narrative inquiry aims to understand the multidimensional meaning of society, culture, human action, and life while exploring the participant's life experiences in the process of storytelling. This has fascinated me to explore the background of schoolteachers, particularly, how was he/she brought up, whether familiar with Indigenous knowledge and cultural practices that contribute to sustainable management of the natural resources or not, and how the knowledge was presented while teaching CCE at school. Understanding schoolteachers' background was helpful to understand the effectiveness of teaching CCE by balancing the science of CC with Indigenous knowledge and cultural values. In addition, it was helpful to explore how they have been coping with the impacts of climate change.

Schoolteachers from the same communities with experience of indigenous knowledge and cultural practices in the management of the natural resources were found using many stories and experiences of ceremonies, festivals, and rituals. They have been worshipping nature and contributing to sustaining the intactness of water resources to maintain the ecosystem and biodiversity. The stories and experiences of schoolteachers based on the communities have been helpful for students to connect their theoretical knowledge on climate change to their day-to-day lives. Though schoolteachers from outside the communities have been more guided by school curriculum and textbooks while teaching CCE, they have also been found using more examples from the communities such as melting the ice in the mountains and early blooming flowers as indicators of warming the temperature. However, the connections to the stories of indigenous communities have rarely been drawn. This also shows how important it is for schoolteachers to be aware of indigenous knowledge and cultural practices if they wish to drive the enthusiasm of students to learn about climate change and reflect in their day-to-day lives.

Therefore, the stories of the schoolteachers were essential for me to understand who they were and whether they were aware of the values and roles of indigenous knowledge and cultural practices or not. Since, "story, in the current idiom, is a portal through which a person enters the world and by which their experience of the world is interpreted and made personally meaningful" (Connelly & Clandinin, 2006, p. 477), I aimed to interpret each of schoolteacher's stories to meet the purpose of my study. While exploring the stories of schoolteachers, I also became more familiar with the narrative inquiry as the methodology of my study. While interpreting and analyzing the narrative texts further, I investigated the authenticity and ownership of the final narrative texts. Who owned the story?--was a crucial moment to think about it and develop mutual understanding among the researcher and participants in the research. In narrative inquiry, it is often assumed that each individual engaged in the study owns stories. Also, in the case of my study, I have counted myself as one of the participants along with 6 schoolteachers, whose stories and lived experiences formed the basis of my Ph.D. Three questions; how do school teachers teach and learn about climate change, how do they interface CCE and indigenous knowledge, and how they reflect on climate change issues concerning the school curricula were explored to interpret each of the teachers' stories. The stories were explored from the theoretical lenses of John Dewey's Theory of Experience, the Vygotskian Socio-Cultural Theory as well as Habermas's Theory of Knowledge and Interest. These theoretical referents provided critical lenses for exploring the stories of schoolteachers. During the process of regenerating the meaning of the stories, sometimes the stories were more likely to diverge in certain ways from the original. In this situation, the ownership of all participants was unlikely to exist equally because it depends on how they are narrated and retold in the process of generating the meaning from the stories. To minimize it, I presented the stories and experiences of the schoolteachers as accurately and faithfully as possible.

Familiarizing Stories in Narrative Inquiry

Familiarizing ourselves with the stories of schoolteachers is vital in this narrative inquiry. The background of schoolteachers (e.g. where he/she is from) was not enough while dealing with the complexities and subtleties of the stories. Therefore, exploring schoolteachers' experience, their perspectives, and values are equally essential for the interpretation of the stories and generating meaning out of them.

In narrative inquiry, it is essential to capture the holistic information through the stories of individuals by building a good relationship with them as co-researchers. In other words, it is establishing "collaboration between researcher and participants, over time, in a place or series of places, and in social interaction with milieus" (Clandinin & Connelly, 2000, p. 20). I collaborated with my participants and joined in school sports and other social events and functions where I could exchange stories, try to understand their views, and their belief systems while teaching and learning CCE at schools.

While I was listening to the stories of schoolteachers, they became more interested in sharing their stories for hours. They became more open in sharing the reasons why some teachers have been more concentrating on the science of CCE than interfacing to Indigenous knowledge and why some teachers are so passionate about sharing the stories of their ancestors and cultural values to be continued as part of the CC solution while teaching CCE. Schoolteachers from other communities with science backgrounds but no previous experience or training on Indigenous knowledge tended to follow the school curriculum and textbooks that prioritize the science of CC. Compared to them, schoolteachers from a science background but with experience of teaching local curriculum on CC with interfacing Indigenous knowledge in the past were not just following the curriculum and textbooks but were balancing science of CC with Indigenous knowledge and cultural values as the solution to CC impacts. This shows that the stories of the lived experience and training of schoolteachers on Indigenous knowledge shape the modalities of teaching CCE, whether focusing on the science of CC or interfacing with Indigenous knowledge and cultural values while dealing with CC.

How teachers have been teaching CCE is one part, but another important aspect is how students understand CC and change their behaviors in their day-to-day lives. It was another issue I was seeking through the stories of schoolteachers as well as while interacting with students and parents in the communities. Children understand the meaning of CC when teachers provide examples from the communities. For example, concerning the Himalayas, how ice is melting and turning into the rock as well as rhododendron blooming earlier are examples of the rising temperature. Children from the Indigenous communities become more excited and understand the cultural values when teachers provide ample examples of cultural and spiritual values of the communities. It includes how they have been worshipping and protecting their forest, spring water, and endangered species as part of the efforts for addressing climate change. This helps children to not only understand the meaning of CC but be critical to take the responsibilities of protecting the cultural values. Also, it facilitates in learning the knowledge systems and skills from their parents. This would contribute towards transformational changes in providing holistic education for children from the general trend of the science of CC by interfacing Indigenous knowledge and cultural values that contribute to CC resilience.

The stories of 6 teachers who have been teaching CCE that I explored during the course of this study contributed to increasing the level of awareness on climate change. However, when the course of the study focused the science aspect of CC without interfacing to the indigenous knowledge and cultural values, the teaching and learning process has not been helpful to increase the passion of students to connect the theoretical knowledge of climate change into practical social and cultural values of children while coping with the impacts of climate change. Whereas, teachers either from the indigenous communities who have been

sharing the knowledge and cultural values as children or who have been sensitized through past experience or trainings on the role and contributions of Indigenous Peoples on climate change resilience have been supporting children for better understanding the role and contributions of their indigenous values and knowledge system to be protected and continued. The role of such teachers would not only support the children for increasing the level of awareness on climate change but also contribute to bring the transformative learning from the general trend of science focused education in Nepal. When the children come to realize that their parents who have been worshipping the big tree in the forest and sacred sites for the welfare of the families and communities, they would realize that traditional practices and rituals are to be protected and continued. The children would value the crucial role and contribution of the customary institutions for the governance of the natural resources for the protection of their ecosystem, biodiversity and contribution for the climate change resilience. Therefore, while teaching CCE, the knowledge on CC is important but more that the values of the knowledge would be helpful if they would interconnect into their lives that motivate them to respect and feel the importance of indigenous values for climate change resilience.

Limitation of Narrative Inquiry

In the journey of narrative inquiry as methodology, the approach of exploring the stories and lived experiences of schoolteachers has also some limitations. As mentioned earlier, unlike paradigmatic modes of study that have been focusing more on formal and empirical proof with scientific thinking, the narrative approach has been believed to capture the differences and complexity of lives by capturing the emotions and feelings, and by presenting the holistic picture of the stories through interpretation of the study. Although I was passionate about exploring the stories and lived experiences of schoolteachers, I could not make sure whether I could capture their passion and feeling while listening to their stories. Most of the teachers agreed on the need to interfacing CCE with indigenous knowledge. But, whether they really mean it has not been clear. As a researcher, I depended on schoolteachers with my trust in their stories. I looked for additional information from other schoolteachers, parents, and students to support their stories and experiences.

Although the generated stories are embedded in the lived experience of the participants and are already an interpretation of the views and perspectives of the co-researchers, they need further interpretation in the narrative inquiry because the stories need to be retold, analyzed, and presented in chronological sequence of past, present, and future. It seeks chronological observations at the beginning, the middle, and the ending of the stories. This creates the potential for meaningful analysis and gives a holistic picture to the researcher. While presenting them from the lenses of the researcher, there is a risk for deviation in the meaning of the stories. Therefore, while retelling the stories of the 6 schoolteachers and interpreting their stories and experiences, I was careful to make sure that I present the core values and beliefs of the participants while internalizing my own experience of working in the area of climate change with indigenous peoples. I was in frequent touch with my participants until the end of my study to make sure their stories would be helpful to bring a paradigm shift in the CCE.

In narrative inquiry, the collaboration is possible only if both parties are sincere and ethical towards the data in the form of stories and its interpretation. If I had not been sincere and open to the participants, the stories they had shared would have been limited and the participants would not have linked the past and expressed their thoughts for the future. Thus, mutual collaboration with faith and trust helped to lessen the possible gap of miscommunication. It is hard to believe that all the shared stories are true but the truth can be maintained while retelling the stories by capturing the spirit of the stories.

Moreover, multiple issues may arise while collecting, analyzing, and retelling other stories (Creswell, 2013). The meaningful interpretation of the stories of schoolteachers depends on the authenticity of the data in the form of stories and on the truthfulness that the researcher demonstrates while analyzing the stories along with relevant artifacts to generate a holistic meaning of the stories. I tried to follow the ethical dimension while interpreting the stories of schoolteachers and make sure the interpretation captured the essence of the stories. Finally, as we cannot generalize the outcome of the qualitative study, stories can be shared to bring positive changes in the school education while teaching CCE by interfacing with indigenous knowledge and cultural values of Indigenous Peoples. Although narrative inquiry may not be critical and transformative all the time, if we learn from the stories and experiences from the ethical dimension, it would be helpful to bring transformation in our education system on climate change.

Conclusion

Narrative inquiry has been a suitable methodology to explore the stories and lived experiences of school teachers who teach CCE. For me, it helped to enhance understanding of the ways of learning and teaching CCE with indigenous knowledge and cultural values. The experience of schoolteachers on the indigenous knowledge and cultural values shared more stories from the communities, bringing into reference how they have been protecting their natural resources. It helped children to understand the concerns of climate change, and to value their own knowledge system for climate change resilience. Though, the general trend of CCE has been more focused on the technical aspects of climate change, which gives limited opportunities for children to balance their technical knowledge with their real lives, the stories of schoolteachers have been powerful for understanding the present realities of CCE and the importance of interfacing with indigenous knowledge and cultural practices. This can foster the transformation towards holistic education that helps students to be critical and to bring an emancipatory interest from education by balancing science and indigenous knowledge in CCE teaching and learning at schools. Maybe, the results of this study would not have been rich and insightful if the narrative inquiry had not been used as a methodology for exploring the stories of schoolteachers.

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Conflict of Interest

I declare no conflict of interest regarding this article.

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