


Chapter 10

Challenges in Digital Preservation of Indigenous Knowledge within the Open Science Framework

Sibongile Chituku

 <https://orcid.org/0009-0005-2026-5764>

Africa University, Mutare, Zimbabwe

ABSTRACT

This chapter explores the challenges of digitally preserving Indigenous Knowledge (IK) within the Open Science Framework, highlighting conflicts between IK's communal nature and principles of openness. Key challenges include ethical dilemmas (consent, ownership, cultural misrepresentation), technological barriers (limited infrastructure, rapid obsolescence), and legal issues (intellectual property laws vs. traditional knowledge). It addresses cultural sensitivities (respecting protocols, community resistance) and resource constraints (financial limitations, shortage of trained personnel). The 7C model (Co-design, Conceptualisation, Collection, Correction, Curation, Circulation, Creation) is proposed to navigate these complexities. The chapter advocates for community-led, culturally respectful approaches to ensure IK preservation while aligning with Open Science ideals.

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INTRODUCTION

Indigenous knowledge (IK) represents a vast repository of wisdom developed over centuries, deeply rooted in the traditions, practices, and cultural heritage of Indigenous communities. It encompasses knowledge systems related to agriculture, biodiversity, health, ecology, and cultural practices (UNESCO, 2017; First Nations Information Governance Centre, 2014). As globalization and technological changes continue to accelerate, digitally preserving Indigenous knowledge ensures its survival and accessibility for future generations (Biyela et al., 2016)

Efforts to digitally preserve Indigenous knowledge have gained traction worldwide. For instance, Indigenous communities in Canada have adopted digital platforms to document oral traditions and ecological practices. These projects aim to protect cultural heritage while bridging traditional knowledge and modern science (First Nations Information Governance Centre, 2014). Similarly, audio and video recordings are used to safeguard endangered languages, ensuring their transmission to younger generations and supporting cultural revitalization initiatives (UNESCO, 2017).

By employing Digitisation, Indigenous communities preserve ecological practices and traditional insights, thus contributing to sustainability research. For example, traditional ecological knowledge related to land management, biodiversity, and water conservation has been recorded and shared through digital archives (Biyela et al., 2016). This not only fosters cultural pride within communities but also informs global initiatives in sustainability and environmental conservation.

This chapter provides a comprehensive overview of the various obstacles faced in preserving Indigenous knowledge in the digital age. It emphasizes the importance of Indigenous knowledge, which is often deeply rooted in cultural practices and traditions, and highlights the need for its preservation to ensure that it is not lost to future generations (Chiwanza, Musingafi, & Mupa, 2012).

One of the primary challenges discussed is the issue of intellectual property rights. Indigenous knowledge is often not formally documented, making it difficult to protect under conventional intellectual property laws. This can lead to bio-piracy and exploitation, where external entities may use this knowledge without proper consent or compensation (Chiwanza et al., 2012).

The chapter also addresses the cultural sensitivity required in digitizing Indigenous knowledge. It is crucial to understand and respect the cultural contexts and sensitivities associated with this knowledge to avoid misrepresentation or misuse, which can lead to cultural erosion and loss of trust (Boamah & Liew 2017).

Technological barriers are another significant challenge. Many Indigenous communities have limited access to digital technologies and the internet, which hampers efforts to digitize and preserve their knowledge. This digital divide needs

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