


Chapter 1

Examining the Intersection of Open Science and Indigenous Knowledge Systems in the Digital Environment

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ABSTRACT

Open science and the developments of the digital environment have played a vital role in research on indigenous knowledge. This chapter discusses the relationship between open science and indigenous knowledge in the digital environment. The core elements of open science included open data, open educational resources, openness to diverse knowledge, open access publication and open science infrastructure among others. The review showed increased interest among nations on open sciences as witnessed by interventions that have been adopted globally. These interventions show that there is a collaborative role between research indigenous knowledge and open science and this has been enabled by digital technology development. However, the implementation of open science in research on indigenous knowledge has faced some challenges related to ethical issues and the reliability of indigenous knowledge, lack of Indigenous knowledge resources and limited funding.

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INTRODUCTION

The creation and dissemination of information and knowledge have always been vital fields for human cultures, including indigenous groups that often rely on traditional wisdom, as well as for science and technology. Converging disparate knowledge systems and facilitating knowledge co-production in these communities begin with knowledge integration across researchers and knowledge users. To decolonize the research integration of the knowledge creation process, this collaborative procedure is also essential. However, power disparities across Indigenous communities, researchers and research funders can hinder the integration of knowledge, exacerbating support of dominant forms of knowledge over others, and ultimately resulting in the marginalized and weaker knowledge holders losing their expertise (Yanou et al., 2023). The path to knowledge legitimacy and applicability is recognized in academia as being paved by knowledge integration and other co-strategies in which all participants validate the various meanings and contents of knowledge systems as well as the co-produced outcomes (Roshetko et al., 2022, Matuk et al. 2020). This integration should be viewed as a process that empowers the most marginalized knowledge holders to create fair collaboration among various knowledge holders (Gupta et al., 2015; Lima & Persson, 2020). Maintaining cultural diversity, addressing scientific knowledge gaps, and acknowledging Indigenous and local knowledge as essential to social justice, sovereignty, autonomy, and identity of Indigenous peoples and local communities are the three reasons why knowledge integration is relevant in this context (Yanou et al., 2023). However, research has shown that while access to indigenous knowledge has not always been simple, access to scientific information has not always been straightforward either. With issues about information access and intellectual property rights generating disputes and conflicts throughout the history of communication technologies and information societies, these difficulties have become more apparent in the digital environments that have been defined by the globalization of knowledge.

The integration of knowledge creation activities has been made easier by the developments of the internet and the web. Digital advancements have had a significant impact on many facets of society, including agenda-setting, knowledge generation, and sharing (Fecher and Friesike, 2013). They have also helped to solve scientific problems that these groups have faced (Ijatuyi et al., 2025). However, these advancements have presented several difficulties for IK research. This is because while these advancements have made it easier to obtain data by removing geographical restrictions, indigenous populations are frequently left out of the information loop and the advantages that come with having access to this data (Vicente-Saez and Martinez-Fuentes, 2018). This is the case even though these communities have turned to Indigenous Knowledge (IK) and Indigenous Knowledge Systems (IKS)

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