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Open science and the management of traditional and scientific knowledge: A case study of the Takinahakỹ Center for Indigenous Higher Education at the Federal University of Goiás, Brazil.

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This study presents the first findings of the project: **Open science and the management of traditional and scientific knowledge: A case study of the Takinahakỹ Center for Indigenous Higher Education at the Federal University of Goiás, Brazil.** The main aim is to improve the capacity of indigenous students to effectively manage and safeguard the records of traditional and scientific knowledge they generate during their work on the undergraduate degree course in Intercultural Education at the Takinahakỹ Center for Indigenous Higher Education at the Federal University of Goiás (UFG).
Specifically, the aim is to:
• Propose strategies that encourage indigenous students to design protocols for the management of their data and information guided by CARE principles in an integrated manner;
• Enable the use of innovative technologies related to data sharing and traceability within the Research Data Repository of the Federal University of Goiás (UFG);
• To build a conceptual modeling and technological implementation of the collection of records generated within the scope of the Takinahakỹ Center of UFG considering the FAIR principles and replicability requirements.

In the degree course of Intercultural Education at UFG, the research carried out by indigenous students during the course begins in the basic training matrix (pedagogical and transdisciplinary principles of intercultural education) and continues in the specific matrices (Natural Sciences and Mathematics, Cultural Sciences and Language Sciences). Their purpose is to support dialogue between the specific knowledge produced by indigenous groups and the so-called scientific or universal knowledge, thus favoring the realization, in practice, of transdisciplinarity and interculturality. This scientific practice also supports language policies, the struggle for citizenship, political participation in various intercultural contexts, the production of teaching materials and the construction of pedagogical projects and school management, as well as encouraging the entry of indigenous intellectuals into the scientific scene.
The thematic axes of the course to be worked on will be guided by five lines of research, namely:
• Indigenous Education and School Education;
• Environment and Self-Sustainability;
• Language Policies and Bilingual Education;
• Art, Tradition and the Market;
• Indigenous Policies, Interculturality and Indigenous Movements.

At the end of the course, each "new"indigenous teacher, based on their research and the area they have chosen to specialize in, will present an alternative project to improve life for their community. This is not a monograph, but an extension project aimed at quality teaching in indigenous schools, linked to the projects of the communities in which they live. There are two presentations of this final project: one in the University and another for their own group, with the elder evaluating according to their own approach.
The proper management of traditional and scientific knowledge generated by indigenous students depends, first of all on the terms agreed between the interested parties (researchers/students, scientific institutions, government, project team, among others). The training of the indigenous students is essential in order to align the understanding of the decisions to be taken and the modus operandi of the entire process of registering the knowledge. These terms between the parties, also known as protocols, must include:
• previously established conditions for handling information/material during the project;
• appropriate data management approach;

• local governance structures to support the project;
• consensus on the implementation of the project;
• Terms of Consent previously established and clarified from the students considering the context and self-designation;
• Gender issues as a priority for women's needs and opportunities.

In order to guide the drafting of agreements and protocols, which can bring benefits and generate ethical and responsible partnerships in the context of scientific research carried out by indigenous students, the CARE principles provide a set of guidelines to be considered so that these actors effectively hold the governance of their data, basically establishing data standards on traditional and scientific knowledge; relationships and research practices defined in detail.

This is a mixed-methods study, which will rely on initial quantitative surveys and a qualitative approach. The methodology for implementing the Center´s collection in the research data repository follows the bottom-up approach with multiple case studies, considering that the students come from more than 30 different ethnic groups. Besides that, a multidisciplinary working group involving researchers and students will be responsible for carrying out the proof of concept for the collection of traditional and scientific knowledge in UFG's digital research data repository, that uses dataverse software.

We are planning to use TK labels (Traditional Knowledge labels) and BC labels (Biocultural labels), that are digital labels developed through definitions established by the indigenous communities that hold their data and are been used in various countries, enabling them to publicize local and specific conditions for sharing data and information, as well as detailing how involvement in future research and relationships should be consistent with rules, governance and community protocols signed for the use, sharing and circulation of knowledge and data.

This is an innovative and pioneering effort in the state of Goiás and the central-western Brazilian region, as it aims to systematize the traditional and scientific knowledge generated by indigenous students in order to strengthen their groups, generating a secure and reliable base of traditional and scientific knowledge considering previously defined protocols (agreements) guided by the CARE and FAIR principles, which will enable the construction of the conceptual modeling and technological implementation of the collection of records generated within the scope of the center that can be replicated in other experiences of this type of knowledge registry.

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