https://doi.org/10.64211/oidaijsd191204

From field to syllabus: Policy pathways and pedagogical models for integrating indigenous food sustainability practices into South African school curricula

Lindokuhle Nzuza [1], Fairhope Gumede *[2]
[1,2] Department of African Languages and Culture,
Faculty of Human and Social Sciences, University of Zululand, KwaDlangezwa, South Africa.
*Corresponding author: GumedeFN@unizulu.ac.za

© Author (s)
OIDA International Journal of Sustainable Development, Ontario International Development Agency, Canada.
ISSN 1923-6654 (print) ISSN 1923-6662 (online) www.oidaijsd.com
Deposited in SSRN repository: https://www.ssrn.com/ssrn/

Abstract This qualitative research was conducted to assess the policy regimes, to compare pedagogical models, to evaluate teacher capacity, to contrast community involvement strategies, and to investigate the roles of digital technologies in indigenous knowledge integration. The study concentrated on the opinions of curriculum specialists in KwaZulu-Natal. A total of eight experts participated, and their views were captured through in-depth interviews. The data were analysed using thematic analysis. The findings indicate that although the current policies requiring Indigenous Knowledge Systems integration are pervasive, they are general and lack the necessary guidelines and support for schools, resulting in patchy implementation. Various pedagogical approaches with strong emphases on cultural relevance and community participation are present but not adequately implemented due to a lack of teacher training and resource limitations. It is important to emphasise that community participation is crucial in the true and co-creation of curriculum as an instrument of culture, but operative problems and threats of superficial participation exist. Digital technologies have been recognised as a promising medium to document and transmit indigenous food knowledge, but tools are still underdeveloped in this empirical sense. Taken together, these results point to the necessity for clearer policy direction, better professional learning, more inclusive curriculum design and more strategic use of technology. The study informs prospective educational agendas for incorporating indigenous ways of knowing in South African curricula that contribute to sustainable foodways and cultural justice.

Keywords: Cultural Relevance, Sustainable Foodways , Cultural Justice, Professional , Educational Policy

Introduction

Studies on policy paths and pedagogical approaches for positioning indigenous food sustainability practices within South African school curricula are becoming critical to investigate in light of the imperative to combat food insecurity and develop culturally sustainable education. Since the apartheid era in South Africa, Indigenous Knowledge Systems (IKS) have been recognised in educational policy documents to some extent, especially with the 2004 IKS policy and the Curriculum and Assessment Policy Statements (CAPS) for Natural, Physical, and Life Sciences (Opoku & James, 2021; Madlela, 2023). Despite these policy progressions, the South African education system is still predominantly Eurocentric in nature, which results in the marginalisation of indigenous knowledgebases on the sustainability of life, thus its potential for extending indigenous knowledge on food sustainability is restricted (Madlela, 2023; Hlalele, 2019). On a global scale, indigenous food plants are a source of nutrition and sustainable diets, but their potential is still not properly exploited within the formal education system (Zuma & Mbhenyane, 2023; Pereira et al., 2022). The social and pragmatic relevance of integrating indigenous food knowledge is highlighted by alarming rates of malnutrition in Sub-Saharan Africa, where 239 million people are undernourished (Zuma & Mbhenyane, 2023; Molokwa & Setshego, 2025).

The problem under investigation concerns the poor coverage of indigenous food sustainability in the South African school curriculum, contrary to policy directives that support the inclusion of IKS in the curriculum

(Madlela, 2024; Madlela, 2023). There is a significant missing link in policy direction and pedagogical example on how to bring indigenous food-related knowledge into science and life science teaching (Madlela, 2024; Mkhwebane, 2024; Photo & McKnight, 2024). Heritage teachers do not always have the heritage knowledge capital and the pedagogical content knowledge to deliver IKS in a meaningful way, and they are confronted with they are confront with challenges such as a lack of training, appropriate teaching materials, and time to collaborate with community knowledge holders (O'Donoghue et al., 2024; Mkhwebane, 2024; Photo & McKnight, 2024). The debates between incorporationist, separatist and integrationist models of IKS in science education continue to mirror inherent tensions between Western scientific paradigms and Indigenous epistemologies (Naidoo, 2010; Kwofie & Ogunniyi, 2011). Not attending to these gaps means reproducing cognitive oppression and undermining culturally responsive education (Mudaly & Sanjigadu, 2022)

This review applies a theoretical lens that views Indigenous Knowledge Systems as local and traditional knowledge, which is culturally and geographically specific and therefore needs to be considered within the context of application for sustainable practices (Das & Halder, 2025). It places indigenous food sustainability amid decolonising education and culturally relevant pedagogy and highlights how the inclusion of IKS with Western science leads to epistemic justice and learner engagement (Opoku & James, 2021; Teane, 2024; Kwofie & Ogunniyi, 2011). Using the concepts of African Renaissance as groundwork and socio-cultural learning theories, the theoretical framework of this study repositions indigenous knowledges and links them to curriculum reform (Madlela, 2023; Mandikonza, 2019).

This study analysed the policy and teaching models for including indigenous practices of food sustainability within the school curriculum in South Africa. It addressed the following research objectives:

- To assess the state of knowledge regarding policy frameworks that support the integration of indigenous food sustainability within South African curricula.
- To identify and synthesise barriers and enablers to teacher knowledge and capacity to engage with indigenous food sustainability.
- To contrast models of community involvement conducive to co-creating culturally appropriate educational material on indigenous food systems.

It mapped best practices, challenges and possible frameworks to support culturally responsive and sustainable education. The study, therefore, helps to bridge the gap between policy intent and classroom practice, providing useful insights for teachers, policy makers and curriculum developers (Madlela, 2024; Gugulethu & Gumbo, 2025; Opoku & James, 2021).

Literature review

Research relating to the inclusion of indigenous food sovereignty practices in the South African school system has developed considerably within the last 20 years. Early investigations were concerned with recording indigenous knowledge systems and bringing awareness to their importance from a nutritional and cultural standpoint. Over time, the focus of research turned to issues relating to pedagogy, teachers' readiness, and policy that would enable educational decolonisation/cultural responsiveness. Recent studies highlight community involvement, digital media and new curricular possibilities which consider indigenous knowledge and sustainability education holistically.

This literature review consolidates the present academic discourse on the inclusion of Indigenous Food Sustainability Practice (IFSP) in the curricula of South African schools. Based on the fundamental research questions, the analysis is divided into three sections with a view to critically examining the conducive policy climate, the teacher corps capacity, and the models for genuine community and technological partnership.

Paradox in current policy frameworks

An analysis of policy frameworks shows a major contradiction. Research shows that although inclusiveness is prescribed, there is little indication on how to put it into practice. A recurring theme in the literature is the presence of policies such as the Curriculum and Assessment Policy Statements (CAPS), which mandate teachers to include Indigenous Knowledge Systems (IKS) (Madlela, 2023; Bhuda & Maditsi, 2025). Yet this policy tier is crucially defined by an absence of detail on content, coverage and depth, allowing for the integration on the part of the teachers and an erratic, even shallow, application (Madlela, 2024; Naidoo, 2010).

Such ambiguity operates within a wider structural context of epistemic dis/balance. Scholars articulate the sidelining of IKS within a Eurocentric dominant curriculum as a matter of cognitive justice and decolonisation (Opoku & James, 2021; Shizha, 2025). Therefore, the challenge for policy-makers is not technical, but philosophical. The literature advocates for moving beyond tokenistic aspects towards transformative interrogations of IKS as legitimate knowledge strands that can engage with discourse in fields such as Natural and

Life Sciences (Madlela, 2022; Tarisayi, 2024). This repositioning is considered critical for reproducing the cultural relevance and social justice objectives of post-apartheid education.

Teacher readiness and the gap in knowledge pedagogy

The combination of barriers and enablers to teacher capacity presents a clear bottleneck in the integration process. A common finding is that teachers are perceived to lack the necessary heritage knowledge capital and specialised pedagogic content knowledge (PCK) to teach IKS and IFSP adequately (O'Donoghue et al., 2024; Mkhwebane, 2024). This shortfall is exacerbated by institutional difficulties in enforcement and resourcing, such as a lack of suitable teaching materials, overcrowded syllabi, and poor pre- and in-service training (Photo & McKnight, 2024; Teane, 2024).

In contrast, there are promising pedagogical constructs which provide potential as revealed in the literature. Culturally responsive pedagogy, Ubuntu-value system and cooperative learning techniques are identified as instrumental in increasing engagement and affirming identities (Mkosi et al., 2023; Sefoka & Chuene, 2025). In addition, promising approaches for the infusion of IKS into STEM and STEAM education offer innovations that potentially can transform science learning by linking it to indigenous technologies and sustainability challenges (O'Donoghue et al., 2024; Kwofie & Ogunniyi, 2011). What is badly needed is professional development that moves beyond simply raising awareness to providing teachers with the content knowledge of the IFSP and the pedagogy to support a process of integrative, dialogue-based learning.

Elders and practitioners as co-educators and curriculum consultants

Different approaches to co-developing culturally relevant content emphasise that genuine co-creation cannot be achieved outside of the knowledge-making community. Engagement with Indigenous Knowledge Holders is a significant focus (20/50 papers), upheld as a non-negotiable component for asserting correctness and authenticity as well as for conservation and revitalisation of diminishing knowledge systems (Madlela, 2024; Masenya & Bhuda, 2025). Successful models feature Elders and practitioners as co-educators and community advisors, offering experiential learning through events such as cultural tours (Mudaly & Sanjigadu, 2022; Mbeshu-Mhlauli & Fikelepi-Twani, 2024).

Digital and technology tools are identified as a potential but still evolving means of preservation and transmission (Opoku & James, 2021; Mkosi et al., 2023). Digital archives, interactive apps and other multimedia platforms have the ability to connect generations, engage learners, and allow local knowledge to travel outside of place. The literature does warn, however, that technology needs to be used ethically and in conjunction with communities and not to appropriate or misrepresent. The most comprehensive measure proposed is a blended approach, in which digital means are employed to capture and multiply the community-based knowledge that is produced and validated through intensive community participation.

The reviewed studies highlight that IFSP integration is a complex process that must take place at the levels of policy, pedagogy, and partnership. The explicit focus on indigenous food systems and sustainability connects these themes with pressing socio-ecological concerns such as food security and biodiversity (Zuma & Mbhenyane, 2023; Molokwa & Setshego, 2025). In the end, the identified gap is not in reasoned rationale or in available goodwill, but in having a coherent, resourced, systemic scaffolding that links clear policy directives to teachers who have been prepared for their role and are supported by community partnerships and contextualised resources. This review identifies a critical need for frameworks that materialise these linkages to enable the shift from visionary policy to transformative classroom praxis.

Method

The research design was qualitative and interpretivist in nature. This paradigm seeks to explore the meanings and interpretations of human experience and perceptions (Creswell & Poth, 2018). As the study examined intricate matters such as interpretations of policy, teaching practice and culture, a phenomenological case study design was utilsed. This allowed for a detailed investigation of the case, which was the integration of IFSPin KwaZulu-Natal, South Africa (Yin, 2018).

The target population included all those who were part of the conceptualisation, development, or delivery of curriculum at Life Sciences, Agricultural Sciences, and Indigenous Knowledge Systems at the [secondary] school level across the province of KwaZulu-Natal. A purposive sampling procedure enabled the selection of participants who were most likely to provide rich, information-laden cases (Palinkas et al., 2015). A total of eight (8) curriculum specialists and experts, based on their reputational standing, were identified as the final sample. This included: senior teachers for Life Sciences and Agriculture at schools deemed to have strong IKS programmes. This expert sample was selected to provide a meso-level view of the policy-practice pathway, focusing on the perspectives of those who support and oversee implementation.

Primary data was collected through semi-structured, in-depth interviews. An interview guide was developed around the core research objectives, with questions probing policy interpretation, pedagogical models, capacity-building needs, and community engagement strategies. Interviews, each lasting approximately 60-75 minutes, were conducted virtually via a secure online platform, recorded with permission, and transcribed verbatim. To supplement interview data and enable triangulation, a document analysis was conducted on relevant policy documents, including the KwaZulu-Natal Provincial curriculum implementation guidelines and workshop reports related to IKS.

Thematic analysis, following the six-phase framework outlined by Braun and Clarke (2006), was employed to analyse the transcribed interview data and documentary sources. The process involved:

- Familiarisation with the data through repeated reading of transcripts.
- Generating initial codes to identify interesting features.
- Searching for themes by collating relevant codes.
- Reviewing themes to ensure they formed a coherent pattern relative to the coded extracts and the entire dataset.
- Defining and naming themes to capture their essence.
- Producing the final analytical report.

The analysis was supported by the use of NVivo 14 software for efficient data management and coding. To ensure trustworthiness, member checking was performed by sharing thematic summaries with two participants for verification, and a clear audit trail of the analytical process was maintained. All participants provided written informed consent, were assured of confidentiality and anonymity, and were informed of their right to withdraw at any time. Participants are referred to by generic role descriptors (e.g., Subject Advisor) in the findings to protect their identities.

Findings

Interviews with eight curriculum experts in KwaZulu-Natal analysis showed a uniform story of systemic fragmentation. The results are presented according to four leading themes that highlight the challenges and possibilities for harmonising Indigenous Food Sustainability Practices (IFSP) in the view of policy execution and support.

Lack of clarity

The data revealed that there is a top-down policy directive for the integration of IKS, but this is being hampered by a lack of articulation of what this means in terms of action. Participants depicted policy documents as offering a philosophical orientation rather than encompassing requisite instructional detail, resulting in a considerable 'implementation gap.' This vagueness consigns integration to a voluntary practice, contingent on individual teacher motivation instead of institutional mandate. The participants' narratives reflect this operational ambiguity.

One Subject Advisor said, "The policy is quite clear that we have to mainstream IKS… But from that bullet point to a lesson plan… there is a huge desert of guidance." An Academic Curriculum Developer who articulated this consequence also shared "The vagueness is a double-edged Sword... but it also means the integration can be optional, based on a teacher's personal interest/comfort level."

This theme suggests that the present policy context does not offer the scripting of curriculum that would be conducive to consistent implementation. The imperative remains a high-level ideal, too weak to dislodge the inertia of the dominant Eurocentric curriculum because it does not contain the substance, or form of pedagogy, or assessment procedures that would necessitate and support unified implementation.

Exemplary models lack systemic channels

The findings suggest that while there are powerful context-based pedagogical models for integrating IKS, these models are distant from the everyday curriculum delivery systems. Experts saw a gap between effective, yet often project-based, work and comprehensive, sustainable support to enable broad teacher uptake. The dominant regime fails to institutionalise these innovative practices but rather continues to treat them as admirable exceptions if not outright deviance. Participants noted:

> "We see beautiful, impactful projects in isolated schools... But they're projects, not the curriculum. They haven't been systematised into scalable teaching guidelines." (University lecturer)

> "The greatest gap is that of translating indigenous pedagogical practices such oral storytelling and apprenticeship into a mainstream school timetable and assessment regime." (Senior teacher)

The findings show that the obstacle is not the absence of good teaching practices, but the failure of the system to mobilise knowledge. Good practice ends up being stranded in pilots or project silos, not embedded in teacher

training, resource packs, or curriculum planning tools. This is a pedagogical vacuum in which a Western didactic approach is the unchallenged default.

Role of the community as external consultants

The participants indicated that established models of community participation are transactional and tokenistic as opposed to being grounded and co-constructive. While recognised as essential, Indigenous Knowledge Holders are generally framed as occasional guest lecturers, rather than as full collaborators in curriculum development and authenticity. This does not provide the basis for building the policies, procedures, and resources to support a just and sustainable partnership. The participants took a somewhat bleak view of this as captured in the following evidence:

> "The usual course is to 'invite a *gogo* (Grandmother) for a special talk.' This is tokenistic. For actual co-creation, the community should be involved in setting the learning outcomes…from the beginning." (Subject advisor).

> "There are no institutional mechanisms or budgets to pay community knowledge holders… This easygoing path is drying up, and draining. (Senior teacher)

The evidence suggests an alarming lack of relationalconnectivity. Meaningful integration involves more than one-time interventions such as consultations, rather it requires that informed community participation be embedded in the institution through formal partnership agreements, protocols of ethical compensation, and collaborative advisory committees that confer epistemic authority to communities in a sustained, structured, resource-rich way.

Dilemma of technology use

Curriculum experts indicated that the potential of digital technology as a means for IKS integration was double-edged. It was a tool at once for survival, standardisation, and access, but also for the decontextualization of knowledge from the lived landscapes and connections that gave it meaning. The present employment of technology was perceived to be accidental and underutilised, with no strategic, ethically informed underpinnings. The participants raised the following concerns:

> "Think about having a provincially-sponsored, digital repository of video interviews with elders…." This could standardise quality and access." (HOD)

> "The risk is a misuse, 'where learners view a video on a practice without being on their local territory. Technology should be used to guide learners outward... not inward towards a screen." (University lecturer)

This tension defines the current state of technology as a potentially bridging, though unrealised, medium. The results indicate that its best use is not to replace experiential learning, but rather to serve as a supportive scaffold, a documented record and a communicative platform that supports and guides interaction with local knowledge holders and places, instead of replacing them.

Discussion

The findings from this study, which considered only the views of curriculum advisors in KwaZulu-Natal, provides a significant meso-level analysis of confirms and challenges findings at a macro level as outlined in the overarching literature review. They point to specific pathways by which systemic disconnects between the intent of policy and the realities of classroom practice are maintained.

The findings highlight that the lack of policy clarity as the major impediment. These findings are consistent with findings from studies by Madlela (2024) and Naidoo (2010). In addition, the finding is consistent with the decolonial argument that, in the absence of clear directives, a Eurocentric curriculum assumes the centre, thus maintaining forms of cognitive injustice (Shizha, 2025; Opoku & James, 2021). The experts' suggestion to move from philosophy to practice speaks to the need for what may be called procedural equity in the policy.

The theme of Pedagogical Vacuum corroborates the literature about gaps in teachers' preparedness (O'Donoghue et al., 2024; Mkhwebane, 2024) but relocates the problem. It indicates that there are effective models at the project level (Mandikonza, 2019; Sefoka & Chuene, 2025), but these models are not scaling up into mainstream practice because of no systemic pedagogical scaffolding. The issue isn't just that teachers do not have enough knowledge; it's that successful, context-rich pedagogies don't have institutionalised support to scale them into formal curriculum and assessment frameworks. This relates to STEM/STEAM integration literature (Nwokocha & Legg-Jack, 2024) that indicates that 'how' to integrate takes dedicated curriculum design work that has been largely missing.

The representation of community as an External Partner encapsulates the literature on vulnerable inclusion (Mudaly & Sanjigadu, 2022). Their critique of the "guest speaker" model, and the emphasis on the absence of formal protocols and remuneration, offer a crisp and highly practical analysis of the power imbalances that mark existing modes of engagement. This result powerfully endorses the theoretical imperative for epistemic justice, but it also casts it as a practical ethics and resource issue. It confirms the relevance of structured co-creation models (Gugulethu & Gumbo, 2025) yet exposes that such models are unworkable without financial and administrative reforms at the district or provincial level.

In addition to the above, Expert opinions on digital technology add critical nuance to the developing dialogue on digital IKS tools (Opoku & James, 2021; Mkosi et al., 2023). The proposed "digital repository" is compatible with the goals of preservation (Das & Halder, 2025), and the warning against an engagement with the threat of decontextualisation. This duality suggests a model for how to use technology: It should be a vehicle for genuine, not a stand-in for it. This shifts technology, not as a panacea, but as a key part in a broader, community-based ecosystem for transmitting knowledge.

Theoretical and practical implications

Theoretical implications

The inclusion of Indigenous Knowledge Systems (IKS) in the school curricula in South Africa, being the current political rhetoric, challenges the prevailing Western scientific paradigms and serves as a source of disruption by introducing a form of epistemological pluralism and cognitive justice. This is consistent with decolonial and social constructivist perspectives that call for the acknowledgement of different ways of knowing as legitimate and necessary to achieving meaningful learning experiences (Mudaly & Sanjigadu, 2022; Shizha, 2025) (Mkosi et al., 2023).

The findings are consistent with culturally responsive pedagogy frameworks that articulate the significance of linking students' cultural backgrounds and lived experiences to the curriculum information and materials as a means of increasing engagement and understanding. This is prominently seen in models that use community knowledge holders, use local languages as pedagogical tools (Gugulethu & Gumbo, 2025; Opoku & James, 2021; Mkosi et al., 2023).

The findings provide an argument for systems of IKS inquiry which are able to theorise pedagogical approaches to teaching IKS rather than focusing solely on policy imperatives for teaching IKS. The emergence of culturally responsive pedagogical models such as the Madlela model and the M-Know model demonstrates this theoretical trajectory (Madlela, 2024; Nwokocha & Legg-Jack, 2024; Opoku & James, 2021). The findings demonstrate that teaching IKS within STEM and life sciences curricula supports transformative learning theories by engaging students in critical thinking and connecting theoretical scientific knowledge with real-life indigenous practices, leading to improved knowledge of concepts (O'Donoghue et al., 2024; Teane, 2024; Kwofie & Ogunniyi, 2011). In addition, the use of digital and technological means to protect and transmit IKS creates a theoretical convergence of indigenous knowledge systems and information and communication technologies within education, which allows the emergence of new hybrid forms of knowledge transmission and engagement of learners(Opoku & James, 2021) (Photo & McKnight, 2024) (Masenya & Bhuda, 2025).

The theoretical dilemma inherent in balancing the protection and preservation of indigenous knowledge systems while revealing the spiritual or metaphysical aspects in order to make it more congruent with scientific highlights the need for refined theories that accommodate the ideals of both methodologies without positioning either as dominant (Mlotshwa & Tsakeni, 2024) (Opoku & James, 2021).

Practical implications

Policymakers need to fasttrack a curriculum framework review to make provision for indigenous content strands that have clear criteria to guide and resource support be made available to those communities of teachers that beams into indigenous content in its teaching (Madlela, 2022). Pre-service and in-service education and ongoing professional development programmes should be improved to empower educators with heritage knowledge capital and the pedagogical capacity to effectively integrate IKS (O'Donoghue et al., 2024).

Indigenous know-ledge holders and local communities can be engaged in collaborative partnerships with schools and faculties of education to co-develop curriculum content and enable field experiences, including field trips, cultural tours, and participatory lesson design (Opoku & James, 2021).

The creation and use of digital tools, including culturally contextualized applications and networks, can stir up enthusiasm for learning and make indigenous knowledge more available, especially for young people who have high digital literacy but are culturally alienated (Opoku & James, 2021; Masenya & Bhuda, 2025). The teaching of indigenous food sustainability practices to students could influence certain policies regarding the sustainable

pyramid as part of food security and environmental stewardship, which have education as a vehicle for sustainable diets and local agroecological wisdom (Zuma & Mbhenyane, 2023; Maepa et al., 2025).

Curriculum developers at the schooling level should take a stance of inclusive curriculum which incorporate Western scientific knowledge and indigenous ways of knowing production holistic science education that would appreciate cultural diversity and sustainability (Opoku & James, 2021).

Conclusion

This study focused on the policy and teaching strategies for integrating indigenous methods of food sustainability in the school curriculum in South Africa. The findings reveal a cornerstone the recognition of national curricula's importance in Indigenous Knowledge Systems (IKS) in specific policy mandates such as CAPS. However, this kind of policies often vaguely specified regarding content and practical aspects of implementation within the schools, so to a certain extent, teacher education is left to a great deal of discretion and a lack of support. This contradiction, combined with the continuing marginalisation of indigenous epistemologies over Western scientific paradigms, limits substantive integration and calls for further policy intervention that more explicitly articulates indigenous content and clearer pathways for curriculum development.

Community engagement is increasingly recognised as a key facilitator in authentic curriculum development and knowledge transfer. The use of digital and technological platforms is an exciting, but nascent, route for safeguarding and sharing indigenous foodways. In the end, the study calls for a holistic, decolonial educational transformation that prioritises epistemic justice through recognising indigenous knowledge systems alongside Western science. This shift necessitates integrated policy, comprehensive teacher education, an inclusive community involvement, and appropriate technology use. Integrating these elements may lead to curricula that not only improve understanding of indigenous food sustainability but also support culturally grounded social and environmental resilience.

References

Bhuda, M. T., & Maditsi, M. E. (2025). The importance of integrating indigenous knowledge systems in South Africa's basic education. In M. T. Masenya & T. M. Maepa (Eds.), *Indigenous knowledge systems and education in Africa*. IGI Global. https://doi.org/10.4018/979-8-3373-4124-8.ch003

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). Sage.

Das, A., & Halder, T. (2025). Indigenous knowledge helps to develop sustainable lifestyle practices. *Shanlax International Journal of Education, 13*(3), 20–27. https://doi.org/10.34293/education.v13i3.8638

Dumbuya, E. (2025). Developing culturally responsive curriculum models for African education systems. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.5022219

Gugulethu, B. P. Z., & Gumbo, M. T. (2025). Exploring the integration of indigenous knowledge into life sciences pedagogy in the FET phase. *Science of Law Journal*, 2025(2), 268–279. https://doi.org/10.55284/pybs1p49

Hlalele, D. (2019). Indigenous knowledge systems and sustainable learning in rural South Africa. *The Australian and International Journal of Rural Education, 29*(1), 88–100.

Kwofie, S. K., & Ogunniyi, M. B. (2011). Using food science concepts to enact science–indigenous knowledge systems classroom-based discourses. In *Proceedings of the 19th Annual Meeting of the Southern African Association for Research in Mathematics, Science and Technology Education*.

Madlela, B. (2022). The needed categories of indigenous knowledge systems in natural science curriculum in South Africa: Narratives from Pongola schools. *Interdisciplinary Journal of Rural and Community Studies, 4*, 23–35. https://doi.org/10.38140/ijrcs-2022.vol4.03

Madlela, B. (2023). Prospects and challenges of integrating indigenous knowledge systems into the natural science curriculum in schools. *Eureka: Social and Humanities*, (3), 3–19. https://doi.org/10.21303/2504-5571.2023.002867

Madlela, B. (2024). Techniques and a model for the incorporation of indigenous knowledge systems into the natural science curriculum in schools. *Studies in Learning and Teaching, 5*(1), 42–58. https://doi.org/10.46627/silet.v5i1.310

Mandikonza, C. (2019). Integrating indigenous knowledge practices as context and concepts for the learning of curriculum science: A methodological exploration. *The Southern African Journal of Environmental Education, 35*, 1–15. https://doi.org/10.4314/sajee.v35i1.2

Mkhwebane, L. N. (2024). Life sciences teachers' integration of indigenous knowledge: A vision for making science classrooms culturally responsive. *Eurasia Journal of Mathematics, Science and Technology Education, 20*(8), em2483. https://doi.org/10.29333/ejmste/14859

Mudaly, R., & Sanjigadu, S. (2022). Epistemic journeying across abyssal lines of thinking: Towards reclaiming southern voices. *Education as Change, 26*, 1–22. https://doi.org/10.25159/1947-9417/11442

Naidoo, P. D. (2010). *Teachers' interpretation and implementation of the policy on indigenous knowledge in the science national curriculum statement* [Unpublished master's thesis]. University of KwaZulu-Natal.

Opoku, M. J., & James, A. (2021). Pedagogical model for decolonising, indigenising and transforming science education curricula: A case of South Africa. *Journal of Baltic Science Education, 20*(1), 93–107. https://doi.org/10.33225/jbse/21.20.93

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research, 42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528-y

Photo, P., & McKnight, M. (2024). Investigating indigenous knowledge awareness among South African science teachers for developing a guideline. *Curriculum Perspectives*. Advance online publication. https://doi.org/10.1007/s41297-023-00224-9

Simmonds, S. (2023). Decolonising pre-service teacher education towards equity. *Alternation, 39*, 40–63. https://doi.org/10.29086/2519-5476/2022/sp39a3

Tarisayi, K. S. (2024). Integrating indigenous knowledge in South African geography education curricula for social justice and decolonization. *E-Journal of Humanities, Arts and Social Sciences*, 1195–1206. https://doi.org/10.38159/ehass.20245711

Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). Sage.

Zuma, M. K., & Mbhenyane, X. G. (2023). A systematic review of indigenous food plant usage in southern Africa. *Sustainability, 15*(11), 8799. https://doi.org/10.3390/su15118799

About the authors

Name: Author 1
Fairhope Ntokozo Gumede
Fairhope is a Lecturer at University of Zululand in the discipline of African Languages and Culture, her work as a researcher focuses on Indigenous Knowledge systems and Culture. I have recently published two articles in this journal, reflecting my ongoing engagement with and contribution to the journal's scholarly scope.
https://orcid.org/0009-0003-4363-2980
Tel:0359026045
e-mail: GumedeFN@unizulu.ac.za

Name: Author 2
Lindokuhle Ayanda Nzuza
Lindokuhle Nzuza is a doctoral candidate in the Discipline of African Languages and Culture at University of Zululand, South Africa. His work as a PhD researcher involves The Impact of Using AI in The Field of African Languages: A Case Study of Two Selected Universities in KwaZulu-Natal