



Indigenous knowledge in the ecotourism curriculum at selected universities of technology and implications for post-qualification practice by field guides

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DECLARATION

I hereby confirm and declare that, to the best of my knowledge and belief, the work presented in this Master's dissertation is entirely my own and does not contain any material previously published or written by another individual. Furthermore, I affirm that this dissertation has not been submitted, in whole or in part, for any other degree or professional qualification at this or any other university or institution of higher learning. The content herein represents the result of my independent research and has been reviewed and verified by my supervisor.

Amanda Z. Khumalo

Date: 12 July 2024

DEDICATION PAGE

This dissertation is dedicated to my parents, Mr Sipho and Nonhlanhla Khumalo. You have never stopped believing that I would achieve it in this tough world. You always saw me as the child that would bring in the belts even when doubt was in my heart, you always reminded me of where I come from and where I desire to be. Thank you for respecting my times away from home to focus on chasing this dream. This is proof that I am the generational curse breaker. To my late Grand-Father: Mr G. Cebekhulu. You always motivated me to read with you under the guava tree shade. As a branch stemming from your tree, I know you are looking at the fruits I am bearing with a big smile on your face. This one is for you. To my siblings: I am because you are, I am the youngest, but you always told me that you would follow on my footsteps. Let us bag another qualification. We are the change for our blood line. Education is our legacy.

Makhosi Amakhulu, Ndawuwe. Camagu. Asé

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ABSTRACT

This research addresses the urgent need to integrate indigenous knowledge systems (IKS) into Africa's ecotourism curriculum. The current curriculum's lack of IKS deprives students of diverse cultural perspectives crucial for successful careers in field-guiding and understanding the role of indigenous communities in preserving flora and fauna. The study aims to establish the value of indigenous knowledge in the curriculum and practice of field guides. It highlights the benefits of integrating IKS, such as enhanced guiding skills, improved interpretation, and increased awareness of community development. However, it also identifies challenges, including resistance to change and resource constraints. The research involved semi-structured interviews with lecturers, students, and industry partners from the Durban University of Technology (DUT) and Vaal University of Technology (VUT), revealing a unanimous support for incorporating IKS. The study emphasizes the need for future research to involve indigenous communities actively to capture their key values and teachings, which are crucial for promoting sustainability and biodiversity preservation. Ultimately, the findings advocate for a paradigm shift in ecotourism education towards a more holistic and culturally sensitive approach by integrating indigenous knowledge.

Keywords: *indigenous knowledge, local people, communities, ecotourism, field guiding, education, curriculum*

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CHAPTER ONE

INTRODUCTION AND ORIENTATION TO THE STUDY

1.1 INTRODUCTION AND BACKGROUND

Prasetyo, Carr and Filep (2019) and Razzaq, Mustafa, Sulaiman and Nordin (2023) argue that the integration of indigenous knowledge (IK) into ecotourism practice would facilitate the participation of local communities in conservation and ecotourism development. Local indigenous communities have maintained their relationship with the environment in a sustainable way that we all can learn from (McGregor, Latulippe, Whitlow, Gansworth, McGregor & Allen, 2023). The critical contribution of local people to ecotourism through their indigenous and traditional knowledge was acknowledged by Paskova and Dowling (2014). This study sought to find the place for indigenous knowledge in the ecotourism curriculum and post-qualification practice. The study intended to highlight the benefits of integrating indigenous knowledge in the curriculum through accentuating the importance of multiple perspectives and worldviews. The study also explored the limitations in merging indigenous knowledge systems (IKS) with the existing curriculum.

The word 'indigenous' refers to a place-based (people and territory) human ethnic culture and knowledge transmitted from generation to generation that has not migrated from its homeland, and is not a settler or colonial population (Knopf, 2015; Stewart, 2018). Indigenous ways of learning, instructing, teaching and training have been viewed by many postmodern scholars such as (Fataar, 2018; Hlengwa, 2019; McGregor, 2013; Mutekwe, 2015; Vidal, 2020; Whelan, 2013) as important for ensuring that students and teachers, whether indigenous or non-indigenous, are able to benefit from education that is culturally sensitive. That would draw upon, utilise, promote and enhance awareness of indigenous traditions, beyond the standard western curriculum of reading, writing, and arithmetic (Kanu, Ndubisi & Ejikeuwa, 2020; McGregor *et al.* 2023). Hlengwa (2019: 4) emphasises that indigenous knowledge is inherent in field guiding in ecotourism, but conspicuously missing from the 'colonial' lecture room. Ecotourism can be used to conserve cultural traditions and roots that otherwise could

be lost due to disuse, thus depriving ecotourists of authentic environmental and cultural knowledge that they search for (Hlengwa, 2019; Suacana, Wiratmaja & Sudana, 2023; Whelan, 2013) as everything becomes westernised.

The politics of knowledge in South African universities has recently witnessed a radical discursive rupture, calling for decolonised education (Fataar, 2018). Tolppanen, Kang and Riuttanen (2022) stress the need for a transformative and holistic change in the education system that is not hesitant to review its foundation and apply the necessary vicissitudes. Students suggested that only a complete overhaul of the curriculum would provide them the type of education that addresses emerging African-centred humanness (Fataar, 2018). In support, Nevhudoli & Netshandama (2023) emphasise that students are the centre for schooling and need to be involved during the process of curriculum development, hence the suggestion that the curriculum structure should be reviewed every 3 years.

1.2 RATIONALE AND SIGNIFICANCE OF THE STUDY

The urgency with which curricular should be transformed to meet the needs of Africa (Mutekwe, 2015) and South Africa in particular cannot be overemphasised. Mutekwe (2015) further asserts that the role of higher education and that of the intelligentsia lie in shaping the direction toward a more culture-specific and relevant curriculum for institutions of learning. Kang, Chen, Svihla, Gallup, Ferris and Datye (2022) opine that many higher learning institutions fail at implementing the necessary academic changes due to ineffective leadership or reluctance to change institutional tradition. Madlela (2022) underlines that the IKS 2006 policy, the Department of Basic Education (DBE), through its Curriculum and Policy Statement (CAPS) 2012 Natural Science (NS) curriculum documents, introduced the notion for IKS to be incorporated, however lacked in providing the content and categories in which it should be taught. In support, Simmie (2023) contends that it should not be whose knowledge is important, western or indigenous, but it should be on the betterment of the quality of education. According to Quezada-Sarmiento, Macas-Romero, Roman and Martin (2018) ecotourism combines passion for travel to pristine areas, preservation and conservation of nature and participation of local communities who enhance travellers' experiences through

interpretation, education and local knowledge (Razzaq *et al.*, 2023). By its nature, ecotourism is educational and aims to influence pro-environmental behaviour (Surjanti, Soejoto, Seno & Waspodo, 2020). Nevhudoli and Netshandama (2023) highlight that the inclusion of indigenous knowledge systems in the curricula is to prepare students for the exposure to different cultures, heritages and epistemologies. Ecotourism can therefore act as a catalyst for the promotion of IK during training and when graduates enter the industry for work.

This study seeks to accentuate the importance of multiple perspectives and worldviews through the ecotourism curriculum and practice. This study intends to highlight the benefits of incorporating IK into the ecotourism curriculum and post-qualification practice in field guiding to enhance industry practice. According to Quezada-Sarmiento, Macas-Romero, Roman and Martin (2018) and Razzaq *et al.* (2023) ecotourism is a combination of preservation and conservation of the natural environment and involves the local community to enhance travel experiences for tourists. In support, Choi, Oh and Chon (2021) opine that ecotourism sustainability can be better understood as a complex association of various elements that affect the local society and wildlife habitats. In support, Turner, Cuerrier & Joseph (2022) argue that they have not yet met better criteria of true sustainability. Brand, Wise, Bedi & Kickett, (2023) and Choi *et al.* (2021) opine that the incorporation of IK in curricula can be achieved through integrated planning, polycentric governance, learning and participation that enhance connectivity.

1.2.1 Indigenous knowledge systems in the ecotourism curriculum and practice conceptualised

Indigenous knowledge systems (IKS) is an all-encompassing system of knowledge that facilitates communication and decision-making involving diverse aspects of life which include agriculture, biodiversity, environmental sustainability, resource management, production and ecosystem (Adeyeye, 2019; Diko, 2023; Gope, Behera & Roy, 2017; Vidal, 2020). Madiopera, Ndlovu and Kai (2023) emphasise that indigenous knowledge systems has been developed over centuries and its worldview is resilient to modernisation and multi-hazards that have been oppressing it since colonisation. Kanu

et al. (2020) highlight that the major challenge confronting IKS is the need for integrating indigenous methods into traditional modes of schooling and formal western education. As noted by Jean-François (2018) African scholars still lag behind in terms of their contribution to global scholarship, hence the limited African IKS in available literature. When Europe colonised Africa, they practically destroyed all of these institutions in order to eliminate Africa within Africans. Mutekwe (2015) and McGregor *et al.* (2023) argue that very little attention has been given to promoting IKS through educational institutions in curricular innovations. Mutekwe (2018) further points out that close scrutiny of themes show that the post-1994 educational era curricular reforms have sought to embed an anti-colonial political stance in education. In agreement, Adeyeye (2019); Keane, Khupe and Muza (2016) and Ng'asike (2019) state that all relevant stakeholders and IK practitioners and scholars must consider developing theories and models suitable for coding, documenting and integrating African indigenous knowledge and information to take its suitable place within international development agendas. Universities are supposed to ensure access to both quality and relevant education, especially in culturally and economically marginalised communities. Razak *et al.* (2023) state that ecotourism plays a vital role in community economic development, however, there is need for more emphasis in the cultural aspects. Mutekwe (2015) and Odora-Hoppers (2002) argue that a complete denigration of Western/Eurocentric knowledge and curricular is not the solution, but an integration of both indigenous and western knowledge systems for people not to feel marginalised as their cultural heritage gets relegated to a peripheral (Hlengwa, 2019). Madiopera *et al.* (2023) affirm that it is seen as conflicting to western knowledge whereas in truth, it is complementary. African universities were among the best in the world before IKS was degenerated and discarded (Madlela, 2022). A holistic view of local, national, regional and international knowledge systems is open and collaborative education that combines the traditions of knowledge sharing and a creation of 21st century technology that is more responsive to students' needs (Adeyeye, 2019; Hlengwa, 2019; Mamphokhu, Bhorat, Oosthuizen, Asmal, Ganyaupf, Netshifhefhe, Martin, Monnakgotla & Rooney, 2022). African Indigenous Knowledge Systems (AIKS) need to be carefully and appropriately incorporated in all of the education curricular for Africans (Mutekwe, 2015). Assefa (2021) and Ensiyawatin, Sumarmi and Astina (2021) argue that a textbook alone cannot provide relevant

knowledge to place-based tourism conditions, hence the teaching of culturally relevant circumstances is imperative. Beeftink (2011) points out that the special combination of IK and ecotourism guiding means tourists learn different culture and local environmental ethic and values related to indigenous communities and knowledge. The inclusion and recognition of IKS are imperative to preserve the culture, rights and foster relationship that sustain indigenous ecological knowledge (Carson, Kentatchime, Nana, Njaboa, Colea & Godwin, 2018; Lima, 2016; Madiopera *et al.*, 2023). Scheyvens, Carr, Movono, Hughes, Higgns-Desbiolles and Mika (2021) posit that due to the exploitation of indigenous peoples and cultural appropriation by the tourism industry and the lack of alignment with indigenous values, indigenous communities have become sceptical about fully engaging with the industry. It is for this reason that Thompson, Manshack and Schuyver (2021) suggest that when working within indigenous communities, access to practice with indigenous populations should increase levels of confidence, preparedness, knowledge and understanding of a variety of topics for the indigenous communities and tour guides (Beeftink, 2011). Besides protecting biodiversity, ecotourism in indigenous communities is meant to improve the livelihood of the members of the community (Coria & Calfucura, 2012; Phuong, Ra & Dieu, 2022).

1.3 RESEARCH PROBLEM STATEMENT

Kanu *at al.* (2020:2) posit that traditional western methods of education generally disregard the importance of indigenous cultures and environmental contribution, which results in lack of relevance for students of aboriginal backgrounds. Hlengwa (2019) highlights that student protests that have been proliferating across South African universities since 2015 were calling for free, quality, diverse and transformative decolonised education based on inter alia, indigenous African knowledge systems. Calls for decolonising education first emerged on the African continent in the context of decolonising struggles against colonial rule during the 1950s and 1960s (Fataar, 2018). Madlela (2022) suggests that the South African curricular must be Afrocentric and embrace the various cultures in Africa and not simplified only on South Africa because it's being applied in SA. Adeyeye (2019) and Jean-Francois (2018) observed that there was a lack of African scholars contributing to global scholarship in the area

of IKS, resulting in it remaining secondary or not recognised at all in the western science and knowledge production (McGregor *et al.*, 2023). Walter and Guerzoni (2020) stress that indigenising education means that every subject at every level is examined to consider how and to what extent current content and pedagogy reflect the presence of indigenous peoples and the valid contribution of indigenous knowledge. In a study conducted in Ontario, Canada, Joppe (2021) found that there was a need to go beyond IK inclusion, to reconciliatory indigenisation and ultimately decolonial indigenisation. The author further pointed to the challenge posed by non-indigenous faculties and staff who are neither ready to acknowledge such a shift, nor ready to embrace other ways of knowing as component parts of their own courses. This study thus plugged into this debate by highlighting the benefits of including indigenous knowledge in the ecotourism curricular and exploring ways in which this can be implemented to enhance industry practice among field guides.

1.4 AIM OF THE STUDY

The aim of this study was to identify the place of indigenous knowledge in ecotourism curricular and post-qualification practice among field guides using the Durban University of Technology (DUT) (Figure 1-1) and the Vaal University of Technology (VUT) (Figure 1-2) as cases. The use of the two universities as cases in this study is not to compare them, instead, to seek to explain the similarities of the cases. These universities were purposively selected because they both offer ecotourism programmes. This would allow the study to analyse how both universities can best integrate IKS into their ecotourism curricular and explore perspectives towards this phenomenon with intentions to uncover the best suitable approach for the integration. The study further aimed at highlighting the benefits of including indigenous knowledge in the ecotourism curricular, and ways in which this can be implemented to enhance industry practice among field guides. The main research question was: what are the benefits of including indigenous knowledge in the ecotourism curriculum? The sub-question is: how can indigenous knowledge be implemented to enhance industry practice among field guides?

1.4.1 Research Objectives

Frog (2018) states that research objectives give a working direction as they map out how each research question will be answered. Lempriere (2019) further elaborates that research objectives form a foundation of the thesis. The objectives of this particular study were to:

- To determine the theoretical foundations of indigenous knowledge and ecotourism
- To identify the place of indigenous knowledge in ecotourism curricular and post-qualification practice especially among field guides.
- To highlight the benefits of indigenous knowledge in the ecotourism curricular and field guiding post-qualification practice.
- To examine the limitations of indigenous knowledge and make recommendations to mitigate them.
- To explore different approaches and modules to infuse indigenous knowledge to enhance industry practice among field guides.

1.4.2 Research Questions

The study particularly addresses the following research questions:

- What are the key theoretical principles that form the basis of indigenous knowledge and ecotourism?
- How can indigenous knowledge be integrated into ecotourism education and training programs, and what role should it play in professional practices after qualification?
- What advantages arise from incorporating indigenous knowledge into ecotourism education and training curricula, and how does it enhance professional practices in the field after qualification?
- What challenges or constraints does indigenous knowledge face when considered within ecotourism education and professional practices after qualification?

- What are various methods and strategies for integrating indigenous knowledge into ecotourism education and professional practices, particularly focusing on field guides?

1.5 SUMMARY OF RESEARCH METHODOLOGY

The study employed the interpretivist paradigm, as the researcher interpreted the thoughts and perceptions from the participants through data collection. The interpretivist paradigm involves interpreting the elements of the study to integrate human interest and experience (Myers, 2008). In this study, data collection was conducted using purposive and convenience sampling methods, each serving distinct purposes in participant selection. The use of purposive sampling method involved selecting participants based on specific criteria aligned with the research objectives. All lecturers specializing in ecotourism management sciences from the Department of Ecotourism Management Sciences at both the Durban University of Technology (DUT) and Vaal University of Technology (VUT) were chosen. Seven ecotourism lecturers and eleven industry partners specializing in training field guides participated in semi-structured interviews. This approach allowed flexibility while ensuring comprehensive coverage of key topics, facilitating an exploration of their experiences and perspectives on indigenous knowledge and its role in ecotourism practices. Purposive sampling ensured the inclusion of experts directly involved in teaching relevant courses, providing valuable insights into the integration of indigenous knowledge in ecotourism education. Secondly convenience sampling was used, participants were selected based on their easy accessibility and willingness to participate. Third-year students from the Department of Ecotourism Management Sciences who recently completed their work-integrated learning were chosen through convenience sampling. This method efficiently reached a sufficient number of participants, capturing their perspectives on the practical application of knowledge gained during their studies. Eight ecotourism students who recently completed their work-integrated learning were surveyed using questionnaires. This method provided qualitative data on their perceptions and experiences, complementing the insights gained from the interviews. The same methods were applied for field guides. These data collection methods and sampling approaches were chosen to gather comprehensive insights into the integration of indigenous knowledge within the ecotourism curriculum and its practical application, particularly among field guides in ecotourism management sciences at

DUT and VUT. It is noteworthy that gender was not a specific criterion in participant selection, ensuring a diverse representation across all participant groups based on their academic and professional backgrounds.

Semi-structured in-depth interviews and questionnaires enabled participants to comprehensively articulate their perspectives on the research issue, thereby aiding in drawing conclusions for the study. Each interview note underwent thematic analysis to identify recurring themes and significant keywords, which were then visualized through network displays alongside reflective memos. This analysis was crucial for assessing participants' perceptions and viewpoints on various forms of knowledge, including indigenous knowledge (IK), and its integration into academic curricula, aligning with the study's aims and objectives. The chosen methodology predominantly employed qualitative approaches, utilizing semi-structured in-depth interviews with ecotourism lecturers and industry professionals (field guides), supplemented by questionnaires administered to students. While primarily qualitative, the study included a few quantitative question items for added context. Qualitative data were analyzed through thematic analysis, word clouds, word trees, and cluster analysis, incorporating verbatim participant responses to enrich understanding. Graphs were employed to illustrate select quantitative findings from student participants, ensuring a comprehensive exploration of perspectives on IK integration in ecotourism education.

1.6 DELIMITATION OF THE STUDY

Determining the study area, according to Bak and Kim (2015) enables the researcher to narrow the field and prevent it from being too ambitious by trying to cover too wide an area. This delimits a study to a particular area, and a particular group (Bak & Kim 2015). The study was delimited to the cases of Departments of Ecotourism both at the Durban University of Technology, Midlands Campus, and the Vaal University of Technology, Vanderbijlpark Campus. Further the study used field guiding companies that both these departments used to place their students for Work Integrated Learning. This the study focused on seven ecotourism lecturers in both departments, eight ecotourism students, and eleven industry partners involved with tour guiding. Figures 1-1 and 1-2 areal maps of the two campuses used as cases for study, Midlands Campus of DUT within Msunduzi Local Municipality of KwaZulu Natal, and Vanderbijlpark Campus of VUT within Emfuleni Local Municipality of Gauteng.

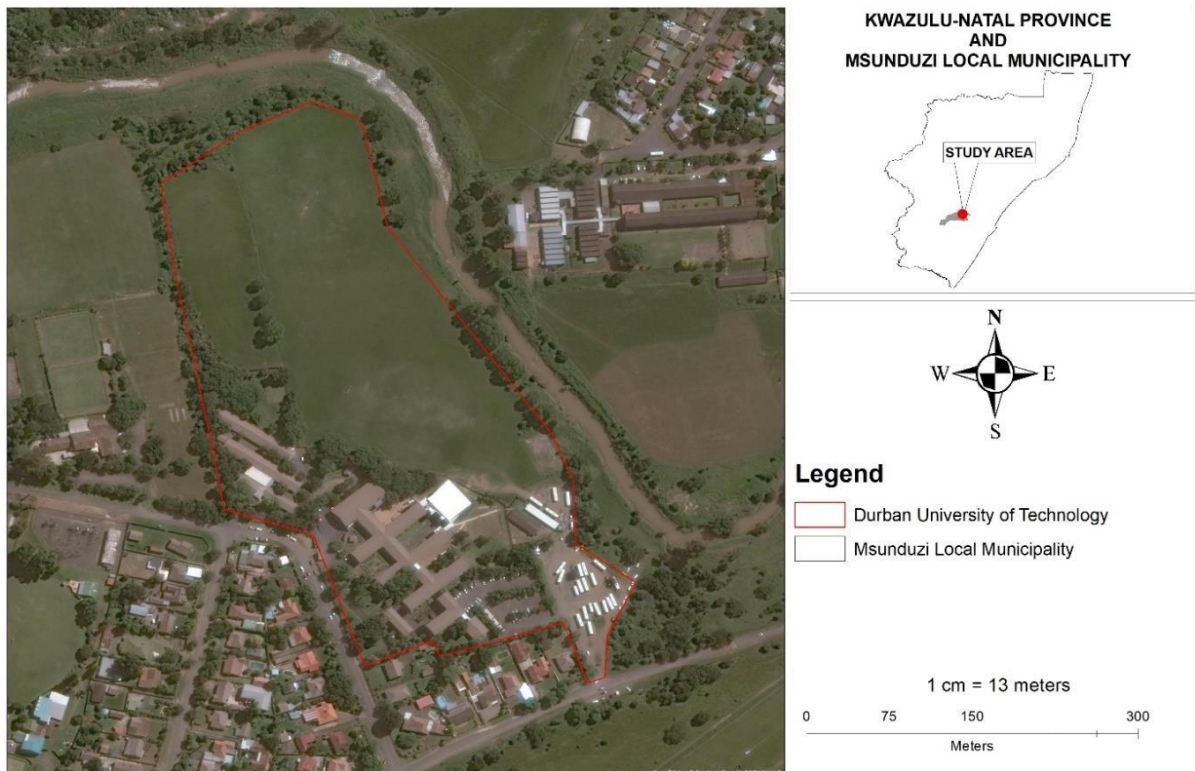


Figure 1-1: Location of Durban University of Technology in Pietermaritzburg
Source: maps.google.com

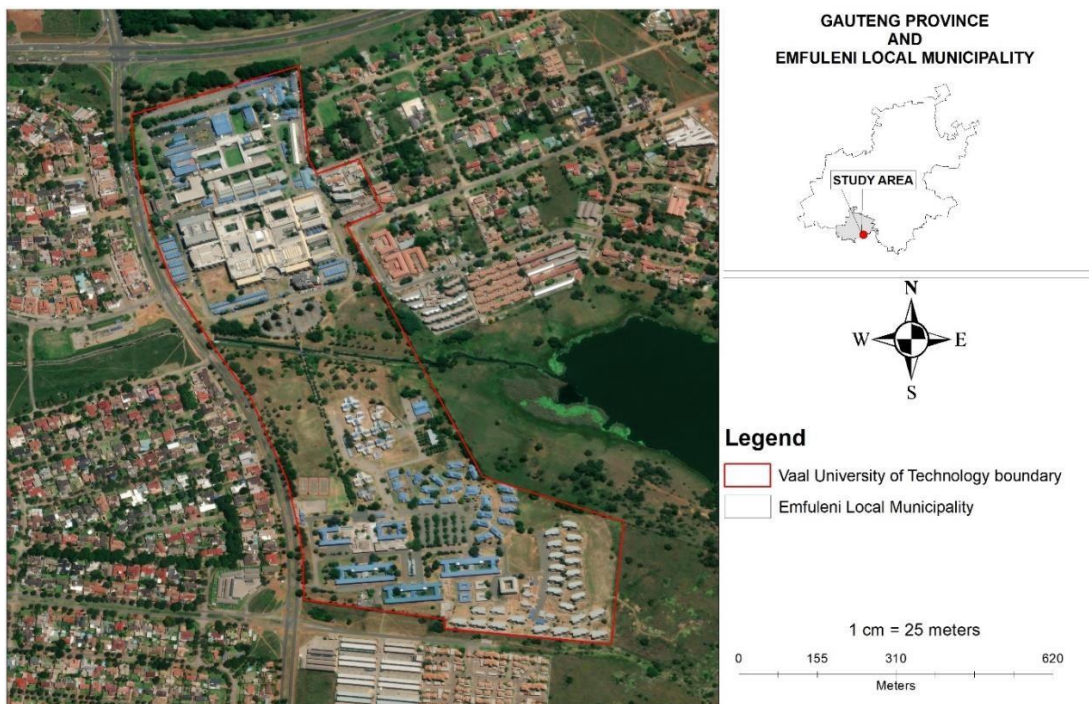


Figure 1-2: Location of Vaal University of Technology in Vanderbijlpark
Source: maps.google.com

1.7 CONCEPTUAL FRAMEWORK

A conceptual framework is a structure used by the researcher to explain the natural progression of the phenomenon being studied (Adom, Joe & Hussein, 2018). It is linked with the concepts used in promoting and systemising the knowledge espoused by the researcher (Peshkin, 1993). It is the researcher's explanation of how the research problem would be explored and how the concepts link. The conceptual framework presents an integrated way of looking at a problem under study (Liehr & Smith, 1999). It is arranged in a logical structure to aid provide a visual display of how ideas in a study relate to one another (Dixon, Gulliver & Gibbon, 2001; Grant & Osanloo, 2014; Trafford & Leshem, 2008). The framework makes it easier for the researcher to specify and define the concepts within the problem of the study as concepts get defined (Luse, Mennecke & Townsend, 2012; Miles & Huberman, 1994). The conceptual framework of this study is made of the following concepts:

1.7.1 Indigenous knowledge

Indigenous knowledge, otherwise known as African indigenous knowledge, refers to knowledge systems embedded in cultural traditions of Africans which include knowledge of beings, forces, universe, ecosystems, human relationships, traditional medicines, traditional technologies, time, divinities, understandings and skills developed by communities and passed from generation to generation over long periods of time (Ejike, 2020; Keane *et al.*, 2016). Knowledge in many indigenous cultures is expressed as a 'a way of being', 'a way of knowing' rather than as a noun, an object or abstract product (COA, 2021:10; Keane *et al.* 2016:166). Supporting this, McGregor *et al.* (2023) and Noor and Zakaria (2018) state that in indigenous communities, knowledge is viewed as diverse forms of knowledge that are deeply rooted in relation to the environment and in communal cohesion, which has allowed them to manage natural resources in a sustainable way, protect their environment, and sustain themselves (Madlela, 2022). Indigenous knowledge systems provide a rich and comprehensive approach to sustainable natural resource management. By combining traditional wisdom with modern conservation strategies, it is possible to achieve resilient ecosystems, biodiversity conservation, and sustainable livelihoods. Recognizing and integrating IKS into contemporary resource management frameworks is crucial for achieving sustainable development that respects and benefits from

cultural diversity. Indigenous Knowledge Systems (IKS) play a crucial role in managing natural resources sustainably within ecotourism by promoting practices that harmonize tourism activities with environmental conservation and cultural heritage. These systems integrate deep ecological understanding and community-based approaches to resource management, ensuring that tourism benefits both the environment and local communities. For example, in various Indigenous ecotourism initiatives around the world, such as the Amazon's Achuar community in Ecuador, traditional knowledge guides the sustainable use of resources, from controlling visitor impact on sensitive areas to managing wildlife and plant harvesting in ways that maintain ecological balance (Latulippe & Klenk, 2020). Additionally, the incorporation of IKS in ecotourism fosters cultural preservation and economic empowerment by allowing Indigenous communities to share their heritage and generate income while maintaining control over their lands and resources. This approach is exemplified by initiatives like those in the Arctic, where Indigenous knowledge informs the development of tourism that respects wildlife patterns and seasonal cycles (Harvard Kennedy School, 2023). Integrating IKS into ecotourism not only supports environmental sustainability but also enhances the authenticity and educational value of the tourism experience. Jardine (2020) and Safakish (2015) assert that indigenous knowledge is rooted in experiences and evolve continuously, develop and improve over time in each community to suit the external fluctuations. McGregor *et al.* (2023) explain that indigenous is a diverse form of knowledge that can be referred to as IK (indigenous knowledge), TK (traditional knowledge), TEK (traditional environmental knowledge), ATK (Aboriginal traditional knowledge) or IKS (indigenous knowledge systems).

1.7.2 Ecotourism

The International Ecotourism Society [TIES] (2021) describes ecotourism as responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education. The term ecotourism emerged in the late 1980s as a direct result of the world's acknowledgment and reaction to sustainable practices and global ecological practices (Diamantis, 2010; Phuong *et al.*, 2022). Phuong *et al.* (2022) further explain that ecotourism was developed to mitigate the negative impact of tourism on the ecosystem, cultural communities and sustainable development. Olearnik and Barwicka (2018) perceive

ecotourism as a hybrid of sustainable tourism, nature tourism and alternative tourism. Francis, Wandaka, Wamathai and Jilo (2019) state the concept of Ecotourism has been championed by the tourist destinations in East and Southern Africa to change the big "five" mammal's mentality and develop other environmentally friendly types of tourism and is thus an important concept in tourism development (TIES, 2015). Suacana *et al.* (2023) express that initially, ecotourism was practiced by nature-lovers who want to experience the environment whilst keeping it intact, this form of tourism has grown over the years and bred sustainability and cultural welfare.

1.7.3 Ecotourism curricular

The qualification as described by the Durban University of Technology (DUT) and the Vaal University of Technology (VUT) aims to equip professionals with advanced skills in managing ecotourism enterprises that prioritize sustainability. This qualification focuses on training individuals to lead ecotourism operations that are responsible, humane, environmentally friendly, and commercially viable. Graduates are prepared to integrate principles of sustainable use, traditional knowledge, and community livelihoods into their business models, balancing these with sound environmental and business practices. This comprehensive training ensures that students can effectively manage and administrate ecotourism ventures that not only thrive commercially but also contribute positively to the environment and local communities (DUT, 2023; VUT, 2023). Diamantis (2010) highlights that the educational characteristics of ecotourism are the key elements that distinguish it from other forms of nature tourism as ecotourism programmes often include natural attributes in an attempt to educate the visitors and locals. An ecotourism training programme serves the purpose of providing knowledge and expertise to those involved in ecotourism, either formally or informally (Diamantis 2010). Razzaq *et al.* (2023) highlight that curricular must not have a once-off approach to IKS, but need to develop consistency and hands-on approach to the training and experiential learning.

1.7.4 Ecotourism post-qualification practice in field guides

According to Buckley (2019) and Conservation Careers (2021), careers in ecotourism have the ability to make a difference in wildlife, habitats and local communities. They further highlight that there are opportunities to work in research organisations, parks

agencies, NGOs, and private enterprises, all of which require an appreciation of people, politics, and tourism, as well as plants and animals. For Conservation Careers (2021), an ecotourism job is any role where your activities aid the conservation or enhancement of wildlife or habitats and upliftment of indigenous communities through ecotourism. Ecotourism industry practice includes employment in hotels, travel agents, airlines and the activities of the restaurant and leisure industries directly supported by tourists (Monterrubio & Espinosa, 2013). Ecotourism destinations are unique locations that prioritize sustainable tourism practices aimed at conserving natural environments, promoting cultural heritage, and benefiting local communities. These destinations are often characterized by their pristine natural landscapes, such as national parks, wildlife sanctuaries, and protected coastal and marine areas. They offer tourists an opportunity to engage with nature and local cultures in a manner that minimizes environmental impact and supports local economies (Butcher, 2008; Fennel, 2020; Honey, 2008 and Scheyvens, 2011). Calix (2015) emphasizes that in post-qualification practice such as ecotourism development specialist, tourism and human resources advisor, nature tourism ranger and responsible tourism communications manager link with the involvement of local communities. Calix (2015) further states that in ecotourism and tourism assessment process there needs to be linking of the local community. During a tour, guides interpret several topics including local plants and animals, community and the history of the area, and convey indigenous culture to tourist (Beefik 2011). Suacana *et al.* (2023) vouch that it is now a growing trend for tourists to be environmentally sensitive and desire to engage with the indigenous communities. Drumm and Moore (2015) stipulate that field guides play a central role in implementing the ecotourism concept. As the principal providers of an ecotourism activity's educational component, their capacity and commitment ensure that the negative impacts of tourism are minimised. Figure 1-3 captures the conceptual framework of the study as perceived by the researcher. It illustrates how the defined concept link to enhance the experience and knowledge of an ecotourist.

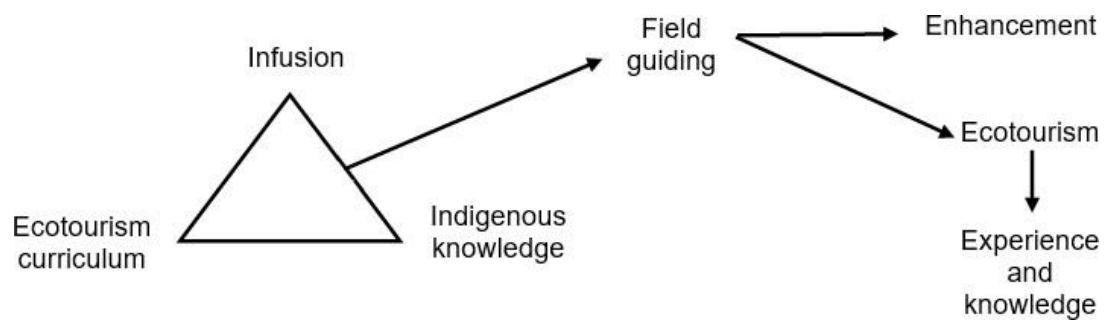


Figure 1-3: Conceptual framework of the study

The Ecotourism Curriculum serves as the foundation and central hub, integrating and orchestrating all other components. It is designed to impart comprehensive knowledge and skills relevant to ecotourism, emphasizing sustainability, cultural sensitivity, and environmental stewardship. Indigenous Knowledge (IK) is deeply embedded within the curriculum, shaping its content and approach. This infusion ensures that traditional ecological wisdom, cultural heritage, and local practices are integral to the learning experience. Field Guiding is a practical application of the curriculum, where guides lead tours that are informed by the principles and knowledge embedded in the curriculum, including the indigenous knowledge components. The curriculum, enriched by indigenous knowledge and effective guiding practices, enhances the overall ecotourism experience by making it more meaningful, educational, and impactful. A successful ecotourism program balances enriching visitor experiences with the transmission of valuable knowledge. This balance is crucial for fostering sustainable and respectful tourism practices.

1.8 STRUCTURE OF THE DISSERTATION

Chapter 1: Introduction and orientation to the study

This chapter covers the introduction, background, rationale for this study and further elaborates on the research problem. This chapter further explained the aim of the study, main and sub research questions, a summary of the research methodology,

delimitation of the study, conceptual framework, and finally, the structure of the dissertation.

Chapter 2: Literature review

This chapter provides literature that substantiates the problem that this study sought to tackle. The chapter locates the study within its field(s) by providing arguments by authorities in the field(s) regarding the significance of IK, importance of infusing it into the ecotourism curriculum, as well as its significance in post-qualification practice by field guides. The chapter also introduces and describes the theory that was used to buttress the study.

Chapter 3: Research methodology and design

This chapter elaborates on the research paradigm, epistemology, methodology and provides justification for the choices made by the researcher. The chapter further describes the population, sampling and sample size, as well as the tools and techniques used to collect and analyse data from the participants. Finally, the chapter deals with ethical considerations observed by the researcher.

Chapter 4: Data presentation, analysis and interpretation

This chapter presents the data collected from the participants, provide analysis and interpretation as a foundation to the conclusion chapter.

Chapter 5: Findings, Conclusion and Recommendations

In this chapter, the study reaches its conclusion. The findings are presented in alignment with research objectives stated in chapter 1. Recommendations are forwarded and the contribution of the study is explained. Finally, the chapter highlights areas for further study for both qualification and publication purposes.

1.9 CONCLUSION

This chapter discussed the rationale of this study by providing some background to the concept of indigenous knowledge systems and the ecotourism curriculum and post-

qualification practice in field guiding, also discussed some of the studies already conducted on this concept. The background and the rationale as discussed in this chapter highlight the important role that indigenous knowledge systems play in ecotourism. This chapter also highlights the limitations presented by literature to codifying and documenting indigenous knowledge systems. The statement of the problem that is presented in this chapter provides the foundation for formulating the aims and objectives of the study, with the overall objective being to find the place for indigenous knowledge in the ecotourism curriculum and post-qualification practice at the Durban University of Technology (DUT) in the Midlands Campus and at Vaal University of Technology (VUT) in Vanderbijlpark.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 INTRODUCTION

The study focuses on the concept of indigenous knowledge systems as having a potential place in ecotourism curricular and post-qualification practice by field guides. This chapter is important because it provides the researcher's map of the territory being investigated (Miles & Huberman, 1984: 33), 'a structure for organising and supporting ideas and a mechanism for systematically arranging abstractions' (Weaver-Hart 1988: 11), which leads to a delineation of the conceptual and theoretical framework of the study (Berger & Patchener, 1988; Leshem & Trafford, 2007). The title of the study is: Indigenous knowledge in the ecotourism curriculum at selected universities of technology and implications for post-qualification practice by field guides. The main concepts (defined in chapter 1) were indigenous knowledge, ecotourism, ecotourism curricular, post-qualification practice and field guiding. These concepts form the conceptual framework of the study and informed the literature to be reviewed.

Chiwanza, Musingafi and Mupa (2013); McGregor *et al.* (2023); Sanga (2021) observe that indigenous knowledge (IK) has managed to survive despite racial and colonial onslaughts imposed by the arrogance of imperialism and colonialism. In November 2004, the Indigenous Knowledge Systems (IKS) Policy was adopted by the DST (Department of Science and Technology) in an effort to recognize, affirm, develop, promote and protect IKS in South Africa (Green, 2008). The Autonomous University of Barcelona (2019) states that the contribution of local communities and indigenous people are still largely absent in international environmental policies. Introducing imported belief systems has caused biodiversity loss and species misidentification, resulting in an intergenerational loss of accurate and sustainable indigenous knowledge about their environment (Aswani, Lemahieu & Sauer 2018; Risiro, Tshuma & Basikiti, 2013; Sanga, 2021; Senanayake, 2006). Indigenous communities around the world, along with their vital knowledge systems for managing environmental conditions and patterns, are tragically vanishing at an alarming pace (Ishii, 2014).

Barkakas and Gladwin (2021); Chambers and Buzinde (2015) highlight that in the context of tourism, western epistemologies served as a foreground for western culture to colonise tourism knowledge, leaving people impacted by the international version of tourism. In support, Peters and Higgins-Desbiolles (2012) state that indigenous Australians have requested cultural acknowledgement from the tourism industry. Chambers and Buzinde (2015) further underscore the significance of valuing, reclaiming and foregrounding indigenous voices and epistemologies. The World Tourism Organisation in the United Nations [UNWTO], (2019) support the call by stating that indigenous people are some of the richest and most unique and diverse cultural expressions of humans.

Kaya and Seleti (2013) posit that higher education in Africa is still too distant from community concerns, and graduates are produced with inadequate development skills for their local communities (Razzaq *et al.*, 2023). Higgs (2011) and Tauro, Ojeda, Caviness, Moses, Moreno-Terrazas, Wright, Zhu, Poole, Massardo and Rozzi (2021) assert that it is important to not just research and learn about biodiversity and cultural diversity, but to also aim to be ethical in practices.

2.2 INDIGENOUS KNOWLEDGE

Knowledge can be distinguished as factual data, belief as a religious concept, and tradition as a practice (Bruchac, 2014), yet often these terms are used interchangeably to designate indigenous worldviews (Zhou & Edelheim, 2021). Knowledge is a dynamic human process of justifying personal beliefs towards the truth (Gope *et al.*, 2017). According to Haverkort and Reijntjes (2020), part of human knowledge is conscious meaning that is directly accessible and expressible in language, while the other part is subconscious and intuitive meaning that is linked to deepest sources of knowledge and the centre of life. Abah, Mashebe and Denuga (2015) state that indigenous epistemologies are narratively anchored in complex kinship systems of relationships among people, animals, the earth and the cosmos, which form the origins for knowing. In support, Akena (2012); Gelinas and Bouchard (2014) expound that there are two categories of knowledge in the indigenous communities, namely traditional or secondary knowledge - which is knowledge transmitted through generations, and

primary knowledge - which is a body of knowledge that is individually gained from personal experiences, practices and rituals.

Carr, Ruhanen and Whitford (2016) and Zidny, Sjostrom and Eilks (2020) analyse indigenous as referring to the original inhabitants of a place, and as things that have developed in a specific place. According to Stewart (2018), western and indigenous are similar identity labels because they are words for heterogeneous groups of people who are still fundamentally different. Ishii, the CEO of Global Environment Foundation [GEF] stated in 2014 that indigenous peoples are those whose identities and cultures are inextricably linked to the land and resources upon which they depend, where (Magni, 2017) indigenous knowledge holders are a symbol of self-identification, self-determination, sovereignty and a fight for social justice. Ghorbani and Bakhtiar, 2011; Magni, 2017 view IK as the backbone for a people's social, economic, scientific and technological identity and thus (Austin & Hickey, 2011) IK cannot be found in the school curriculum, but (Moichela, 2017) from homes and communities as well.

Du Plessis (2021); Senanayake (2006) state that the everyday life aspects of IK and ways of learning were replaced by the colonial education system with western ideas of theoretical knowledge and academic ways of learning. During the early post-colonial period, many academics negatively considered IKS as simple, primitive and static (Senanayake, 2006; Van Wyk, 2002) resulting in it not being recorded systematically in written form and side-lined from mainstream education. IK content is traditionally delivered through oral literacy development, particularly storytelling (Abah *et al.* 2015; Austin & Hickey, 2011; McGregor *et al.* 2023; Morcom, 2017; Tribe & Liburd, 2016). Therefore, a content-driven approach central to the recognition of IK is required for the transformation of education syllabi (Moichela, 2017), to facilitate its inclusion in research collection and development (National Research Foundation [NRF], 2016). McGregor *et al.* (2023) argue that IKS is still not regarded or recognised as equal to western forms of knowledge, it remains marginalised as supplemental knowledge. The Department of Science and Technology (DST, 2014) and Zidny *et al.* (2020) emphasize the crucial role of Indigenous Knowledge Systems (IKS) in deepening our understanding of the historical and cultural contexts of indigenous and local communities. By recognizing and integrating IKS, the DST aims to enhance appreciation and awareness of these communities' traditional practices, which remain

vital to the survival and well-being of the majority of South Africans. These practices are not just remnants of the past but are actively contributing to contemporary life and sustainable development, forming a critical foundation for community resilience and continuity. Abah *et al.* (2015); Risiro *et al.* (2013); Zidny *et al.* (2020) state that western science and western knowledge offer a broader context beyond the local level, while IKS offers an in-depth experience in a local culturally specific context. Sultana, Muhammad and Zakaria (2018) argue that the development of knowledge does not occur in isolation. In agreement, Aswani *et al.* (2018) recommend the integration of these two knowledge systems, as they are complementary or parallel rather than incommensurable (Abah *et al.*, 2015). Subramanian and Pisupati (2010); Zidny *et al.* (2020) vouch that there is a need for a co-existence between dominant and other worldviews to facilitate appropriate co-evolution of multiple streams of knowledge and mechanisms in higher education programmes, meaning that IK holders should be treated with equal respect as western science experts (Jardine, 2020). Abah *et al.* (2015) and Battiste (2005) assure that both IKS and western science rely on direct observation, experience, experimentation, and interpretation. If IK in South Africa is to reclaim and regain its place, empowering the holders in accordance with their current administration, their criteria and epistemologies rather than using western criteria is advised (Botha, 2010; Owusu-Ansah & Mji, 2013).

2.2.1 Indigenous knowledge and ecotourism curricular

According to Tauro *et al.* (2021) ecotourism is two terms: the Greek term “oikos” meaning home or habitat, and French term “tour” meaning a journey. Collectively “oikos-tour” means to travel or tour to the life habits of humans out of appreciation of their “oikos”. Tauro *et al.* (2021); Zidny *et al.* (2020) expound that ecotourism integrates multiple dimensions such as the interrelationships of the biological and cultural diversity (Buesgens, 2013; Chandel & Mishra, 2016; Liu & Li, 2020); appreciation of the uniqueness of the place integrated with tourism practice (Buesgens, 2013; Liu & Li, 2020); the well-being of host community and visitors (Bohensky, Butler & Mitchell, 2011; Buesgens, 2013); and conservation of the habitat (Chandel & Mishra, 2016; Rani, Kassim & Kasmah, 2010; Walter, 2010). Dimitriou (2017) states ecotourism is not only about preserving sensitive and vulnerable ecosystems, but it also embracing the protection of indigenous communities and their knowledge that can be destroyed

or become inauthentic. The International Ecotourism Society defines ecotourism as “responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education” (Bohensky *et al.*, 2011; TIES, 2015). In the 1980s the concept of ecotourism emerged to mitigate the negative impacts such as environmental degradation and cultural erosion of traditional tourism (Liu & Li, 2020). Rani *et al.* (2010) and Razzaq *et al.* (2023) state that when viewed from a sustainable lens, ecotourism is also the catalyst for the balance between economic development, environmental protection, cultural protection, social development and political development. According to the description of the qualification at DUT (2022) and VUT (2022) ecotourism as a branch of tourism is vital for its ability to make noteworthy inputs to vulnerable and finite natural environmental resources, and positively contributing to the socio-cultural, environmental and economic well-being of destinations and local communities.

Ecotourism is a subsector of sustainable tourism (Lackey, Joyner & Bricker, 2019; Mondino & Beery, 2019), which (sustainable tourism) aims to meet the needs of the present and conserve it for future generation through sustainable development of the economy, culture and environment (Eyong, 2007; Mondino & Beery, 2019; Roden, 2017; Zhou & Edelheim, 2021). When ecotourism is implemented correctly it exemplifies the sustainable development efforts (Lackey *et al.*, 2019; Wu *et al.* 2017). Therefore, the development and sustainability of indigenous communities is compatible with ecotourism (Coria & Calfucura, 2012; McGregor *et al.*, 2023).

The primary purpose of formal education is to enhance identity formation and national identity-building and is a process reflected in the national school curriculum (Stewart, 2018). Madlela (2022) stressed that the education system remained Eurocentric, thus contributing to a disproportionate outlook to the cultures of the students and lectures. Velempinia, Martin, Smucker, Randolph and Henning (2017) argue that students should not be limited to textbooks to understand place-based knowledge (IK), but need to engage with the local environment and local people. IK can serve as the base for the construction of reality as the students’ interpretation is based on their cultural background (Zidny *et al.*, 2020). Being limited to textbooks results in a lack of appreciation of the IK worldviews in tourism students (Battiste, 2005; Joppe, 2021). Hlengwa (2019); Travesi (2017) emphasise the need for the inclusion of IK and its

epistemologies in the tourism studies and knowledge production. Extracting resources from IK to rectify “exploitation versus conservation” and “commodification versus preservation” is a developmental discourse that is needed to map out ecotourism (Davidov, 2012; Razzaq *et al.*, 2023). IK can be used to better understand the ecology and the historical distribution of endangered and rare species (Ehlers-Smith, 2021). Tolppanen, Kang and Riuttanen (2022) stress the importance of this understanding to prepare ecotourism students into being pro-environmentally active.

Emeagwali and Dei (2014) are of the view that the decolonisation and indigenisation of the African academy and curricular would help local communities engage in meaningful developmental problem-solving engagements. Decolonisation and Africanisation can be used synonymously and interchangeably (Mheta, Lungu & Govender, 2018). Decolonisation is not disregarding western epistemologies, but it's highlighting the interdependence of cultures (Kaya & Seleti, 2013) and the significance of all forms of knowledge (Hlengwa, 2019). The process of bringing together, acknowledging, valuing IK and wisdom of both indigenous and non-indigenous peoples to learn and respect is the first steps to decolonisation (Viken, Hockert & Grimwood, 2021; Zidny *et al.*, 2020). Joppe (2021) asserts that students are not taught about the indigenous rights in tourism, which leads to cultural commodification because appropriate strategies to approach indigenous peoples are absent. Indigenous views in tourism studies are called for to provide more support in community well-being concerns, issues of ethics and self-determination and empowerment (Travesi, 2017). Students in hospitality and tourism programs are taught how to develop and market products that meet the various needs of tourists without considering the indigenous peoples and underlying impacts (Wahl, Lee & Jamal 2020). The integration of IKS in the school curriculum is important in resource conservation (Risiro *et al.*, 2013). The understanding of indigenous perspectives is critical in tourism as it provides students with an appreciation of the social force and cultural phenomenon it represents, considering sustainable development is a theme in programs (Wahl *et al.*, 2020). Malia and Loubser (2003); Mandikonza (2019) posit that IKS is essential for dynamism in education as it addresses environmental needs and challenges. In support, Cebrian-Piqueras, Filyushkina, Johnson, Lo, Lopez-Rodriguez, March, Quinta-Soriano, Raymond, Ruiz-Mallen, Van Riper, Zinngrebe and Plieninger (2020); Ghorbani and Bakhtiar (2011) and Haverkort and Reijntjes (2010) argue that IK represents a

balanced and harmonious relationship, know-how and wisdom accumulated through experience by unique cultures and communities within their local environments. Shaw, Uy and Baumwoll (2008) cited the cases of how the Simeuluens (Sumatra, Indonesia) and the Moken (Surin Islands, Thailand and Myanmar) used indigenous knowledge to survive the devastating 2004 Indian Ocean Tsunami and other disastrous natural events. Subramanian and Pisupati (2010) argue that biological diversity is adjacent to cultural diversity, and the knowledge associated with them is the common heritage of mankind. Ringo (2019) underscores that cultural, ecotourism and sustainable tourism are interwoven with the usage of indigenous places therefore, IK should be considered in the development and presentation of tourism to visitor by field guides.

2.2.2 Indigenous knowledge and field guiding

Tour guides are central to the entire tourism value chain as they have direct contact with visitors and the local host communities (Francis, Wandaka, Wamathai & Jilo, 2019). The field guide as a mentor, presents, interprets and shares knowledge about the attraction (Buesgens, 2013; Lovrentjeva, 2015). The common roles of the field guide according to Lovrentjeva (2015) are: to lead, to educate, public representation, to host and to channel. Therefore, there needs to be further training of field guides to enable them to practice more mindfulness, reflect more insight and develop related performance indicators (Dimitriou, 2017). Field guides are responsible for fulfilling the expectations of the tourists, the local communities, the destination resources and the expectations of the employers (Francis *et al.*, 2019). They therefore need to be trained and educated about cultural sensitivity, cultural knowledge and cultural competence of the communities they operate in (Mondino & Beery, 2019; Viken *et al.*, 2021) because there is no one-size-fits-all as tourism has to be adjusted to the cultural background of that community and expectations of the visitors (Battiste, 2005; Sultana *et al.*, 2018; Viken *et al.*, 2021). Joppe (2021) and Yi-Fong (2012) emphasize that the local communities should be actively involved in the education and interpretation processes.

According to Buesgens (2013) interpretation is done through talks, walks, storytelling, living history and demonstrations, as taken from early forms of interpretation which was practiced by indigenous peoples (Gelinas & Bouchard, 2014). Interpretation is a powerful tool that can be used to convey indigenous values and knowledge (Carr *et al.*, 2016). Field guides provide descriptions and interpretation of the area's landscape,

people, culture, and flora and fauna (Lethbridge, 2016). The meaning and stories of artifacts, landscape modifications and carvings uncovered by archaeologists during excavations in indigenous locales can be interpreted by indigenous field guides and locals (Bruchac, 2014; Ringo, 2019). Carr *et al.* (2016); Rani *et al.* (2010); Sultana *et al.*, (2018) further advocate for the consideration of indigenous communities throughout tourism planning, development and execution, as they possess IK and crucial information to contextualise tourism experiences (Bruchac, 2014; Haverkort & Reijntjes, 2010). Both biological and cultural diversity are interconnected keys to both the health of the ecosystem and resilience of humans (Aswani *et al.*, 2018). Abah *et al.* (2015); Battiste (2005); Bruchac (2014); Gope *et al.* (2017) argue that indigenous people hold oral accounts that recount human histories, modes of reckoning time and cosmic knowledge, planting and harvesting techniques, skills for hunting and gathering, comprehension of local ecosystems, the manufacturing of tools and specialised technologies and medicinal remedies (Mandikonza, 2019). Therefore, Sanga (2021); Su, Ren, Qin, Hou and Wen (2020) and Tauro *et al.* (2021) state that losing IK is losing parts of the biodiversity. There is much value in integrating IKS into mainstream conservation and development projects as in ecotourism curricula (Aswani *et al.*, 2018).

Field guides need to have cultural awareness and understanding of the host community and their knowledge and understanding and awareness of the cultural differences of the visitors, which will promote sensitivity and respect towards intercultural interactions (Tauro *et al.*, 2021; Viken *et al.*, 2021). Okada and Kato (2014) raised a concern that there was a lack of emphasis on the understanding of indigenous peoples and their cultures during tours as the focus is on communicating their history. Indigenous-based tourism according to Peters and Higgins-Desbiolles (2012) features indigenous people, their spirituality, their cultural skills and practices. Restriction of access to certain places by indigenous people such as ritual spaces and sacred sites should be respected, and it is also vital for field guides to express to visitors the significance of such places so that they respect the reason for their protection (Okada & Kato, 2014; Risiro *et al.*, 2013). Lethbridge (2016) posits that field guides should follow relational accountability, Travesi (2017) talks about respectful representation, Okada & Kato (2014) reciprocal appropriation and Anishchenko (2016) highlights the rights and regulations. Field guides use tourism to educate visitors about culture,

sustaining traditional values and ways of life (Battiste, 2005; Chandel & Mishra, 2011; Travesi, 2017; Yi-Fong, 2012), and decisions on how to express culture and traditions for tourists' consumption must rest with the community itself (Dimitriou, 2017; Lethbridge, 2016). Field guides as representatives of local communities should respect and present in acceptable ways taboos, totes and sacred places, protect and preserve the environment and maintain the values and respect for the human life during guiding and interpretation (Lin, Stoltz, Aruch & Rapperport, 2021; Sanga, 2021; Su *et al.*, 2020; Risiro, Tshuma, & Basikiti, 2013).

2.3 BENEFITS OF INDIGENOUS KNOWLEDGE

Tourism benefits extend beyond employment and financial support to education and infrastructure, community development and revitalization of cultures and traditions (Hughes & Scheyvens, 2021; Mekonen, 2017; Mollel & Kotoroi, 2021; Yi-Fong, 2012). Joppe (2021) reveals that in Canada the promotion of indigenous communities has grown significantly because of the economic development opportunities. The National System of Innovation and the National Education System can flourish and succeed if it is founded in a dialogue and interaction with IKS (Aswani *et al.*, 2018; Du Plessis, 2021). Aswani *et al.* (2018) further contend that IK is more likely to detect extreme events and provide sustainable and long-term solutions especially to natural disasters (Shaw *et al.*, 2008), whereas western sciences produce temporal solutions. Maila and Loubser (2003); Mekonen (2017) advise that the society at large can learn a lot about managing complex ecological systems from traditional skills and knowledge.

According to The Ministry of Science and Technology, IK strengthens collaborations between all stakeholders involved in its design and development programs such as tertiary institutions, NGOs and individual knowledge holders (Green, 2008). Indigenous stewardship of biodiversity for the still growing human population that is confronted by climate change and environmental challenges is urgently needed to provide the foundations for livelihoods and their well-being (Du Plessis, 2021; Gadgil, Berkes & Folke, 2021; Maila & Loubser, 2003). IK is beneficial in a sense that it can aid in creating new enriching research paradigms that are enriching (Green, 2008). The Human Sciences Research Council [HSRC] (2020) contends that IKS offers lessons

that can benefit everyone, unlike modern science which does more harm than good in most cases (Ghorbani & Bakhtiar, 2011). IK approaches problems from a multi-causality framework meaning that multiple factors and effects are considered (Battiste, 2005; Emeagwali & Dei, 2014; Subramanian & Pisupati, 2010).

Abah *et al.* (2015) and Maila and Loubser (2003) suggest that there exist various indigenous knowledge systems that can be meaningfully integrated into western curricular to improve learning outcomes, such as innovative concepts; transformative tools, methods and ways of knowing and being, thus fostering equanimity, humility, respect, compassion and peace (Du Plessis, 2021; Lin *et al.*, 2021). This integration must be founded on mutual respect, trust and accountability in policy making and practice to create improved learning systems (Battiste, 2005). IK holds tools that can bridge the gap between what is taught in the classroom and the experiences lived by students in their societies as well as workplace practice Abah *et al.* (2015); Botha (2010); Hlengwa (2019); Maila & Loubser (2003) and Van Wyk (2002) elucidate that while formal western education is important, it has alienating effects on the majority of the country's black students.

IK represents beneficial knowledge about the interaction of humans with nature, animal behaviour and features of climate and vegetation specification (Ghorbani & Bakhtiar, 2011). Indigenous peoples have their own way of classifying and transmitting knowledge (Battiste, 2005) as they observe the ecosystem and adapt with the rapidly changing environment, such as the case of the Mokol Sea Nomads of Thailand that were saved by an old legend who kept observation of the sea (Arunotai, 2008). IK is able to benchmark the limitations of Eurocentric theories and reconceptualise resilience and self-reliance (Battiste, 2005; Maila & Loubser, 2003). Further, IK is consistent with the principles of sustainable development (Ghorbani & Bakhtiar, 2011; Maila & Loubser, 2003). The link between conservation of biodiversity and conservation of cultural diversity is the wealth of IK (Mekonen, 2017), which is the reason Ringo (2019) argues that IK is a viable option in improving the lives of local communities through tourism.

2.3.1 Benefits of indigenous knowledge to ecotourism curricular

Velempinia *et al.* (2017) elucidate that indigenous people's priorities, values and spiritual orientation is indigenous knowledge and ecological expertise from government agencies is scientific knowledge. Gope *et al.* (2017) and Morcom (2017) argue that it is important to differentiate these two systems to be able to position them accordingly in school curricular. Indigenous knowledge systems have a broad perspective of the ecosystems and sustainable ways of using natural resources (Senanayake, 2006), and ecotourism identified as a vehicle in this study, is a complex and synergistic collection of social, ecological and economic dimensions that satisfy conservation and community development (Wu *et al.* 2017).

The African philosophy can contribute to the transformation of educational theory, research and practice in Africa (Battiste, 2005; Higgs, 2011). Local wisdom can be used to improve the quality of education, implying that teaching materials based on IK will also improve survival skills for students and develop resilience strategies and approaches (Mistry, Berardi, Tschirhart, Bignante, Haynes, Benjamin, Albert, Xavier, Robertson, Davis, Jafferally & De Ville, 2016; Syahrial, Asrial, Maison, Kurniawan & Nugroho, 2021). Resistance is the ability to cope with temporary variability in the environment (Mistry *et al.*, 2016). Indigenous knowledge provides such resistance as it is adaptable and provides problem-solving techniques and practices that change depending on the environmental conditions (Battiste, 2005; Mekonen, 2017). Local knowledge is useful in improving the quality of the learning processes and developing cognitive aspects in students, while also providing means to face challenges of times (Ghorbani & Bakhtiar, 2011; Syahrial *et al.*, 2021; Travesi, 2017). Traditional ecological knowledge is relevant as it emphasises sustainable use and maintenance of the biodiversity (Mekonen, 2017; Syahrial *et al.*, 2021).

Learning about IK and infusing it is essential for ecotourism curricular as this contributes immensely to students gaining respect for different cultural values and beliefs, while also and contributing to development of the deeper understanding of the environment (Wahl *et al.*, 2020; Mondino & Beery, 2019; Sanga, 2021). IKS can introduce diverse options of coping with disturbances in nature even where scientific methods may fail (Choi *et al.*, 2021; Food and Agriculture Organisation [FAO], 2017; Ghorbani & Bakhtiar, 2011; Zidny *et al.*, 2020). A renewed understanding of history,

culture and deconstructing the engagement with knowledge is a process of forever becoming, where students are supported in having their perspectives challenged through knowledge that is inclusive rather than exclusionary of non-Western viewpoints (Wimpenny, Beelen, Hindrix, King & Sjoer, 2021). This means that there is room for unmaking and remaking of ecotourism curricular by lecturers and practical knowledge by field guides. IK supports the co-existence and co-evolution of a diversity of cultures and can be helpful in finding the most desired development path in specific contexts, building on accumulated experiences (Haverkort & Reijntjes, 2010). For this reason, Hannibal (2020) contends that IK needs to claim the educational space to contribute back to its own communities. Engagement with schools and locals brings forth a holistic understanding and responses towards the rapid social and environmental changes (Morcom, 2017; Roberts, Downes, Cooke, Heiner & Caffery, 2014; Velempinia *et al.*, 2017).

The inclusion of the IK in the ecotourism learning process in Mangrove (Indonesia) improved environmental care for students and it taught them a variety of preservation techniques (Mondino & Beery, 2019; Syahrial *et al.*, 2021). Students can contribute to a better understanding of social, cultural, economic, political and natural aspects of their local environments by using their IK (Zidny *et al.*, 2020). Emeagwali and Dei (2014); Knopf (2015); Opoku and James (2020) and Syahrial *et al.* (2021) emphasise that indigenising the curriculum is very beneficial as a way to remedy the epistemological imbalances in the curriculum for its development. Mekonen (2017); Opoku and James (2020) opine that local people spend a great deal of time observing, experiencing and experimenting with biodiversity resources, which teach them things of value in their ecosystems. Integrating IKS in the curriculum enables African students and educators to recognise and acknowledge the existence of multiple forms of knowledge rather than a mono based system of western value and ways of thinking and knowing (Kaya & Seleti, 2013; Mondino & Beery, 2019). In support, Maila and Loubser (2003) point out that western knowledge and indigenous knowledge complement each other and can greatly enhance each other.

African Indigenous knowledge systems (AIKS) is very effective in making education come alive, become relevant and effective to enable students to conceptualise practically, places and issues in both the local area and beyond their immediate

experiences (HSRC, 2020; Kaya & Seleti, 2013). Kaya and Seleti (2013); Zidny *et al.* (2020) shared that the understanding of IK enables students to have a holistic way of knowing, which heightens understanding of their role in the socio-cultural contexts (Morcom, 2017).

Liberation philosophies and methodological approaches that enhance active participation can benefit ecotourism students who train to become field guides (Wahl *et al.*, 2020; Tauro *et al.*, 2021). Universities therefore, have a vital role to play in disseminating IK through education, research, innovation and leadership (Du Plessis, 2021; Wahl *et al.*, 2020; Saez de Camara, Fernandez & Castillo-Eguskiza, 2021). The ability for students to bring cultural knowledge into their academic field will create self-confidence and community trust (Thompson, Manshack & Van Schuyver, 2021; Zidny *et al.*, 2020).

According to Chambers and Buzinde (2015); Tribe and Liburd (2016) IKS offers a mutual mixing of highly participatory, democratic and practical space for tourism knowledge and studies. Battiste (2005); Ghorbani & Bakhtiar (2011); Tribe & Liburd (2016); Zhou & Edelheim (2021) further mention that IKS offers an ethical creative space and support for new holistic academic engagements that bring a unique blend and interrelated context-specific, industry related and experiential indigenous directions. On the same note, Robbins, Robbins and Frailey (2019) maintain that after having indigenous community experiences, students' interest in the importance of human relationships with the environment and indigenous plant knowledge grew. Zidny *et al.* (2020) vouch that the indigenous perspectives contribute to greener initiatives. The ultimate goal should be to help students, who later become field guides, better understand their relationship with indigenous communities (Barkakas & Gladwin, 2021; Kaya & Seleti, 2013) and strengthen the cultural component of ecotourism education (Zidny *et al.*, 2020).

2.3.2 Benefits of indigenous knowledge to field guiding

IK reflects thousands of years of experimentation and innovation in topics like agriculture, animal husbandry, education systems, medicine and natural resources management (Diko, 2022; Gope *et al.*, 2017). Mekonen (2017) comments that it is imperative and beneficial to include IKS in ecotourism practice as it contributes to

habitat and species management plans. Traditional indigenous people have a profound and comprehensive understanding of conservation and sustainable utilisation (Coria & Calfucura, 2012; Mistry *et al.*, 2016; Su *et al.*, 2020). This knowledge is based on valid observation and understanding of their natural world (Gadgil *et al.*, 2021; Velempinia *et al.*, 2017). Every time an indigenous knowledge system is acknowledged and used; we are resisting the deconstruction of our collective memory (Hannibal, 2020). Peters and Higgins-Desbiolles (2012) argue that contemporary understanding of travel comes from indigenous people as guided by spiritual, cultural, and economic responsibilities. Hunters can provide detailed knowledge of the habitat, behaviour, diet and migration patterns of prey and farmers can provide knowledge on how to maintain soil fertility and which plants have medical properties (Haverkort & Reijntjes, 2010; Magni, 2017). Magni (2017); Mistry *et al.* (2016) concur by stating that indigenous people have the ability to read and interpret natural signs, such as animals and plant behaviours, water and sea movement and astrological changes. Gope *et al.* (2017) thinks of IK has deep ecological, cultural, traditional, ethical and practical connectivity as expressed traditional stories embedded with various ways to care for and values which have always guided the stewardship practices (Turner, Cuerrier & Joseph, 2022).

According to Menzies and Van der Merwe (2013), SANParks' (South African National Parks') business operations are based on conservation, nature-based tourism and community building. Lethbridge (2016) opines that tourism has become vital in restoring indigenous culture, traditions and practices and regional pride and consciousness. Indigenous knowledge reflects the insiders' knowledge based on local approaches to problems (Jackson, 2013). Local knowledge includes knowledge about soils, plants, climates and animals (Abah *et al.*, 2015; Emeagwali & Dei, 2014; Eyong, 2007; Haverkort & Reijntjes, 2010). Indigenous worldviews interweave the reality between earth, animals and humans, see all things as co-existing, whilst Western sciences see the oppositions and difference (Knopf, 2015). Mekonen (2017) is of the view that integrating IKS and indigenous communities is the foundation of trust when working in such communities and there are mutual benefits from exchanging knowledge on biodiversity conservation. Indigenous peoples preserve the places that hold the genetic pool for plants and animal species and they uphold the biodiversity of

the flora and fauna in nature (Battiste, 2005; FAO, 2017; Lin *et al.*, 2021; Turner *et al.*, 2022)

Braiding together of IK and western science as compared to looking through each lens separately creates a more comprehensive and holistic understanding (Hopkins, Joly, Sykes, Waniandy, Grant, Gallagher, Hansen, Wall, Fortna & Bailey, 2019; Maila and Loubser, 2003). Lanzano (2013) and Zidny *et al.* (2020) note that IK provides an alternative perspective on nature compared to scientific modern view by offering a richer holistic worldview to initiating learning. Field guides should be taught and trained formally and then informally by local communities (Tauro *et al.*, 2021). Local indigenous interpretation of the landscape and information about the local communities, cultures and histories is beneficial for tourists (Travesi, 2017). Field guides are an essential part of the implementation of ecotourism (Tauro *et al.*, 2021), hence their inclusion in this study. Integrating local wisdom can train field guides on communication skills, how to collect information and conduct investigations and holistic tours in communities (Buesgens, 2013; Syahrial *et al.*, 2021).

In a study conducted in Embera Drua (Panama) Lethbridge (2016) highlights that in tour guides have built relationships with the villagers to encourage the translation of indigenous stories which boosted sales, and engaged them in training and development projects. Liu and Lu (2020) share that on the Orchid Island, indigenous stories have become the symbol of ecotourism. The host community's knowledge serves as attraction (Ringo, 2019; Travesi, 2017). The cultural traditions, lifestyle and knowledge of indigenous peoples are of interest to tourists (Diamantis, 2010; Lethbridge, 2016) and thus critical ammunition for field guides. In the spirit of appreciation, participation and sensitivity, ecotourists are attracted to undeveloped areas (Chandel & Mishra, 2011; Diamantis, 2010) where IKS abound. Suacana, Wiratmaja and Sudana (2023) underscore to need to involve local communities' and the development of ecotourism in tourist attractions by including them in decision-making and planning. The main motivation for ecotourists is observation and appreciation of nature and the local traditions (Chandel & Mishra, 2011; Coria & Calfucura, 2012; Ringo, 2019; Suacana *et al.*, 2023). Ecotourists seek to be immersed in culture and have educative experiences that have the potential to be eye-opening or life-changing (Lin, Wang & Chiu, 2021; Lackey *et al.*, 2019). IKS increases

intercultural awareness, promotes diversity and intercultural competencies (Barkakas & Gladwin, 2021).

Lovrentjeva (2015) points out that a tour guide uses acquired knowledge to present and interpret natural beauties, cultural-heritage, monuments, ethnographies and the historical works of arts and their legends and figures. Buesgens (2013) and Shroff, Deneen and Ng (2011) share how the application of IKS helps understand ways in which one lump of clay can be molded into a prized clay pot, calabash, animals and others. Environmental education connected to the foundational values of indigenous education puts it at an advantage of fostering a value system that appreciates and engages with nature (Tauro *et al.*, 2021; Yu, 2020; Zidny *et al.*, 2020). These foundational values are communicated orally during field tours to teach about the interconnectedness of nature (Tauro *et al.*, 2021; Zidny *et al.*, 2020), as such Yu (2020) opines that ecotourism can be the vehicle to provide environmental education to visitors. Indigenous knowledge is also beneficial to generate a competitive advantage in tour operators and field guides, through their ability to provide unique insights into indigenous spirituality, culture, rock art and bush medicine used in their daily lives during interactions with tourists (Tribe & Liburd, 2016). Mekonen (2017) highlights that linking indigenous knowledge, has given rise to very successful experiences around participation in conservation, management and evaluation actions.

Hughes and Scheyvens (2021) and Yi-Fong (2012) argue that ecotourism activities co-managed with indigenous communities enhance cultural and natural heritage sensitivity. Mollel and Kotoroi (2021) add that items created with a cultural heritage touch and historical resources attract tourists and local communities gain income while maintaining their cultural values. IK as used in field guides may cultivate an authentic sense of the place and culture for visitors (Lackey *et al.*, 2019). Buesgens (2013) reveals that when tourists are questioned about their experiences of the tour, they often focus on ways in which the field guide helped them relate, connect and care for the indigenous host communities and the wildlife (Suacana *et al.*, 2023). Ecotourism with IK underpinnings offer tourists experiences that go beyond nature, culture, human and spirit binaries (Everingham, Peters & Higgins-Desbiolles, 2021). They further state it has potential to encourage tourists to recognize and respect different worldviews (Everingham *et al.* 2021). IK in tourism is also a way to transmit the knowledge and

skills to the younger generations, improve the community's cultural identity and provide opportunities to generate income through local participation in economic development (Lethbridge 2016; Phuong *et al.*, 2022). Tourism managers are faced with tourists' expectations of wanting to be more involved and immersed with indigenous communities (Lackey *et al.* 2019) as they want more enriching experiences. Field guides engage in talking circles in the communities to bring people together to pass on cultural knowledge, practices and values (Barkakas & Gladwin, 2021; Emeagwali & Dei 2014; Menzies; Van der Merwe, 2013).

2.4 APPROACHES TO INFUSE INDIGENOUS KNOWLEDGE

Education can be both the cause of and the potential cure for the loss of indigenous knowledge (Magni, 2017). Students arrive at school with previous learning and continue to learn even after the classroom, therefore teachers need to acknowledge and embrace the place-based knowledge the learner already has (Morcom, 2017). Simmie (2023) contends that teachers need to be responsible for their own academic development through drawing upon research and indigenous or intuitive knowledge that is valuable to the classroom. Austin and Hickey (2011) and Wimpeenny *et al.* (2021) highlight that teachers themselves also need to be able to operate across and within western and indigenous ways of knowing and understand the different worldviews, epistemologies and the hidden curricular. Teachers, (indigenous and non-indigenous) need to work on transforming and decolonising their institutions (Barkakas & Gladwin, 2021; Chambers & Buzinde, 2015; Du Plessis, 2021; Everingham *et al.*, 2021; HSRC, 2020; Morcom, 2017). Gibson, *et al.* (2022) and Hlengwa (2019) caution that that decolonisation should not be the abandonment of existing frameworks, but a demand for a more inclusive indigenous way of thinking and framework. Morcom (2017) contends that it is possible to adapt IKS into the current curricula so that teachers can teach holistically, while still meeting the governments educational goals. To develop and implement this reform, governments, educational institutions and indigenous communities need to increase their joint efforts to create more intercultural and inclusive education systems (Haverkort & Reijntjes, 2010; Harrington & Pavel, 2013; HSRC, 2020; Wahl *et al.*, 2020; Magni, 2017). DST (2019) further proposes that there needs to be IKS Centres within existing universities and community centres that will facilitate and enable broad participation and collaboration with members of local

and indigenous communities. Robbins *et al.* (2019) state that more programmes must be implemented to educate and empower partnerships with the community's involvement in culture-based educational programmes. Indigenous knowledge should not be simply extracted from the indigenous communities, instead, communities should be involved in the knowledge sharing as it is valid in its own right (McGregor *et al.*, 2023). The Department of Education should start phasing in integration of IK into the curricular and provide relevant accreditation frameworks (DST, 2019). Abah *et al.* (2015) and Aswani *et al.* (2018) assert that through the integration of the students' indigenous knowledge system the subject matter can be more comprehensible to grab and apply. To re-orient the curriculum, a multidisciplinary and integrated curriculum pedagogy that is place-based or place-conscious needs to be embraced (Abah *et al.*, 2015; Aswani *et al.*, 2018; Everingham *et al.*, 2021; Roberts *et al.*, 2014). Zhao (2022) goes further to explain that teachers can formulate examples and scenarios using context-based situations and find linkages between established concepts and the students' prior knowledge and integrate indigenous knowledge in their instructions and practice.

Choi *et al.* (2021); Nkhata, Nachiyunde, Mkandawire and Nalube (2019) suggest that holism as an approach will serve as a facet of an African indigenous knowledge system which approves an all-round person in terms of life, social features, cultural traits, economic character and political frame. It is important to understand that western knowledge fragments and compartmentalises, in the form of subjects and fields of study, while indigenous knowledge sees things holistically and as a set of interrelationships (Emeagwali & Dei 2014; Gelinias & Bouchard, 2014; Knopf, 2015; Morcom, 2017). Jackson (2013) elucidates that there is a need to look beyond oversimplifying definitions of both indigeneness and indigenous knowledge as distinct from any other type of knowledge to (Jardine, 2020), considering IK as a holistic and enriching approach to (Higgs, 2011; Lethbridge, 2016), finding and creating information from different knowledge systems. Su *et al.* (2020) advance that understanding, recognising and recording IK ensures its inheritance and continuation and can provide a basis for comparison for present and future generations. Velepina *et al.* (2017) concur with Su *et al.* (2020), by highlighting that IK can help teachers to facilitate more authentic and relevant educational experiences that address current social, economic and environmental realities in a region, while also helping to maintain

local cultural identities and traditions (Nkhata *et al.*, 2019; Peters & Higgins-Desbiolles, 2012). The process of decolonising the curricular needs to examine the teacher-student-community relationships (Abah *et al.*, 2015; Barkakas & Gladwin, 2021; McGregor, 2013; Morcom, 2017) as illustrated in Figure 2-1. Toulouse (2016) sees a classroom as a double-edged sword where holistic or exclusionary exchanges can take place, and mandated and hidden curricular occur in flexible or inflexible structures used to empower or disempower students and a microcosm of society that has both positive and negative outcomes. In Figure 2-1, Toulouse (2016) illustrates how the whole student (physical, emotional, intellectual and spiritual) is the centre of education. Learning and education has to relate to the community, all it represents and its global relationships. Clearly, learning that is devoid of community values and knowledge systems, cannot be holistic.

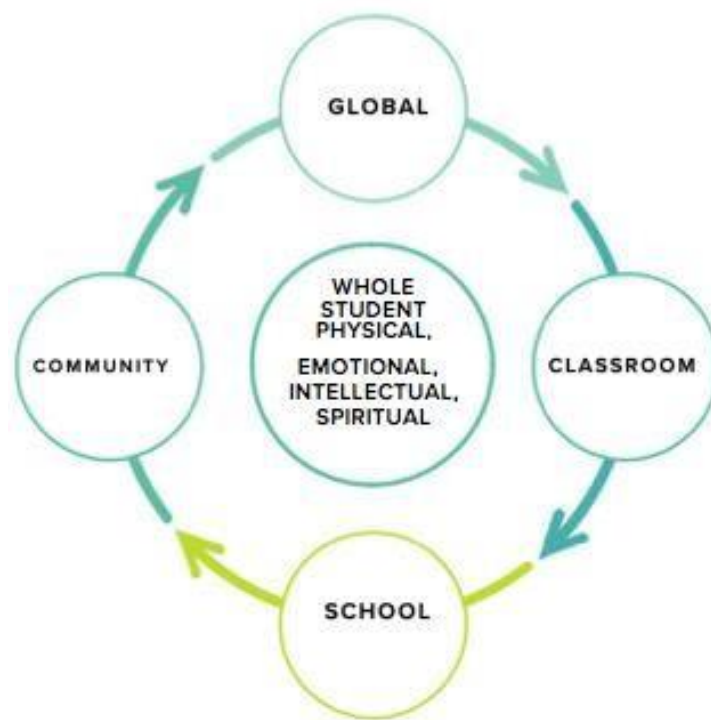


Figure 2-1: Holistic model of indigenous quality learning environment
Source: Toulouse (2016: 12)

The Holistic Model of Indigenous Quality Learning Environment emphasizes a comprehensive approach to education that nurtures all aspects of a student's being and their connection to different environments. This model integrates the physical, emotional, intellectual, and spiritual dimensions of a learner, and considers the influence of the classroom, community, and global contexts on their education

(Toulouse, 2016). It provides a comprehensive framework that goes beyond traditional education by embracing all aspects of a student's life and the broader contexts in which they live. This model recognizes the importance of nurturing each dimension of a student's being and leveraging the classroom, community, and global environments to create a rich, inclusive, and sustainable educational experience.

Botha (2010) and Emeagwali and Dei (2014) further emphasise that South Africa needs to be more culturally diverse in education and recognise African peoples as producers and creators of knowledge (Battiste, 2005; Ghorbani & Bakhtiar, 2011; McGregor *et al.*, 2023; Morcom, 2017). Haverkort and Reijntjes (2010) posit that all knowledge at its best may be seen as an approximation to the truth, therefore no knowledge should be made exclusive to the truth or superior. It follows then that both western knowledge and indigenous knowledge can work collectively (Abah *et al.*, 2015; Everingham *et al.*, 2021). Emeagwali and Dei (2014) further highlight that in order to indigenise the curricular, an appropriate local language of instruction must be used especially in early schooling so that there is not too much divide between community and school. Everingham *et al.*, (2021); Moichela (2017) further explain that the curricular approach and knowledge view needs to consciously apply methodology and language from more than one discipline to examine a central theme, topic and issue. Everingham *et al.* (2021); Lin *et al.* (2021); Mheta *et al.* (2018) suggest that there should be cross-university and cross-disciplinary dialogues and support from indigenous communities that focus on place-based and nature-based education, sustainable ecological virtues and systems thinking expound that inter-iversity partnerships and local partnerships should be strengthened.

Africa requires a philosophical framework that embraces and respects diversity, acknowledges lived experiences and challenges the hegemony of western forms of universal knowledge (Haverkort & Reijntjes, 2010; Higgs, 2011; Viken *et al.*, 2021). Philosophical and theoretical frameworks should also clarify on the role and relevance of African indigenous languages in knowledge production and sharing (Kaya & Seleti, 2013). Integrating IK is seen as an educational remedy that will empower indigenous students through their IKS, heritage and language (Battiste, 2005; Higgs, 2011; Maila & Loubser, 2003; McGregor 2013). According to Tauro *et al.* (2021) curriculum and content developers need to pay attention to the biophysical and cultural contexts where

ecotourism education takes place (DST, 2019; Haverkort & Reijntjes, 2010; NRF, 2016; Roberts *et al.*, 2014).

Kaya and Seleti (2013) emphasize that the extraversion of IKS should be taken as an activity that occurs in a particular set of ideological, political and social frameworks. This requires the efforts and commitment from the national government is required for the recording, valuing and exchanging IKS as a rich source of knowledge (Aswani *et al.*, 2018; Chiwanza, Musingafi & Mupa, 2013; GEF, 2014; Ghorbani and Bakhtiar (2011); Gope *et al.*, 2017; Moichela, 2017). Historians also have a crucial role to play in the creation of epistemological and methodological options, and Emeagwali and Dei (2014) add that libraries will provide essential services to promote and provide opportunities for indigenous communities to actively record and share their history, culture and language.

It is important that indigenous people play a central role in university projects for integrating IKS, and students are actively involved in working with indigenous communities (Chiwanza *et al.*, 2013; Lin *et al.*, 2021; Zidny *et al.*, 2020). The current curricular and pedagogy are still dominated by Eurocentric educational philosophies (Chambers & Buzinde, 2015; Morcom, 2017) and not relevant to African settings. School reform is a long-term process and there are no quick fixes (Harrington & Pavel, 2013; Mheta *et al.*, 2018; Viken *et al.*, 2021), also there is no single approach to IKS infusing and research, but Kaya and Seleti (2013); Morcom (2017) recommend participatory approaches and methods that involve the local people in the planning and management of research activities. It is necessary to redevelop ways of teaching and learning at least in indigenous communities, that are consistently, respectfully and empoweringly holistic (Knopf, 2015; Morcom, 2017). Ubuntu philosophy-infused curricular acknowledge the independence of humans and the more-than-human world, but they do not call for the destruction of dominant knowledge systems (Barkakas & Gladwin, 2021; Du Plessis, 2021; NRF, 2016; Wimpeenny *et al.*, 2021).

2.4.1 Modules where indigenous knowledge can be infused within ecotourism curricular

According to Moichela (2017) the term “curriculum” refers to the existing contract between societies, the state and educational professionals with regards to what the learners should experience to undergo development. Gelinas and Bouchard (2014);

Knopf (2015); Morcom (2017) and Zidny *et al.* (2020) emphasize that indigenous knowledge and western knowledge should not be put in opposition to one another, but they must extend knowledge systems and value in learning from both. Magni (2017); Robbins *et al.* (2019) suggest that experiential learning including practical demonstrations, oral approaches, storytelling, myth narration and songs (Emeagwali & Dei, 2014) is a vital element for the survival of IK, as a great deal of philosophical and educational materials are embedded in the oral traditions and practices (Higgs, 2011). According to Morcom (2017) indigenising the curriculum simply means that the student may use various strategies to test and validate learning that would not be available in a subject-based approach, implying that new ways of knowing are actually 'old wine in new bottles' (Barkakas & Gladwin, 2021). Emeagwali and Dei (2014) elucidate that indigenous knowledge is by definition multidisciplinary as it has practices in sectors such as medicine, agronomy, food processing, chemistry, astronomy (Abera & Belay, 2023; Magni, 2017); biology, geography and interpretation skills (Opoku & James, 2020). Walter (2010) elaborates that ecotourism curriculum developers must consider IK in traditional forms of hands-on guidance and training for livelihood activities, interpretation by field guides, transmission of cultural knowledge through storytelling and rituals, language and cultural exchange to enable holistic view of knowledge instead of the sum-of-parts approach (Shroff, Deneen & Ng, 2011). Madlela (2022) suggests that basic and higher education curricular developers must incorporate IKS as full strand of knowledge and teachers and lectures must be trained on IKS and ways to incorporate it. While IKS can be infused across all fields of knowledge and modules, certain modules seem to lend themselves to IKS. The subsections that follow indicate some of these modules within ecotourism curricular.

2.4.1.1 Community engagement and cultural resources management

It is important to be able to from every indigenous knowledge tradition from Africa to create new tourism knowledge that does not marginalize cultural groups (Chambers & Buzinde, 2015; Zidny *et al.*, 2020), but recognises their ways of life and enhance them. Chambers and Buzinde (2015); Owusu-Ansah and Mji (2013); Stewart (2018); Tribe and Liburd (2016) further call for a different kind of hegemony that embraces diversity, plurality, polycentricity and multiplicity as would be reflected in *community engagement processes* and *cultural resources management* as modules within the ecotourism

curriculum. Zidny *et al.* (2020) further assert that education needs to recognise the multiculturalism of IK and must attempt to acknowledge the multiple ways of knowing, encouragement of teachers and students to promote respective cultural understandings and collaborative solutions between indigenous and western worldviews. Wahl *et al.* (2020) posit that the principles of IK need to be related to the career field and strategies should be formulated to engage with indigenous communities as partners. There have been successful education initiatives in Alaska Rural Systematic Initiative where IK holders play a central role in instructional planning, curriculum design and program implementation in the culturally responsive schools (Magni, 2017; The Autonomous University of Barcelona, 2019). To understand and locate IK and cultural practices, teachers can work together with IK holders (Carson *et al.*, 2018; Roberts *et al.*, 2014; Velempinia *et al.*, 2017). Barkakas and Gladwin (2021) suggest the approach of educational talking circles with indigenous and non-indigenous facilitators to create supported and relational learning environments (Botha, 2010). Maila and Loubser (2003: 15) cite the Credo of Rural Reconstruction where it states: “Go to the people, live among the people, learn from the people, plan with the people, work with the people, start with what the people know, build on what the people have, teach by showing, learn by doing, ...” Nkhata *et al.* (2019) suggest that working with indigenous communities means exploring the everyday actualities of their lived experiences, rather than imposing predetermined concepts and categories for deciphering them. Higgs (2011) speaks on the concept of ‘ubuntu’ as being the root of African philosophy. Lin *et al.* (2021) highlight that indigenous principles address responsibility to the future generations and the (Gelinas & Bouchard, 2014) need to focus on finding a balance between knowledge, people and all of creation.

2.4.1.2 Environmental management, wildlife management and field guiding

Tauro *et al.* (2021) emphasise the importance of authentic ecotourism education, advocating for an understanding of culturally diverse human worldviews and the diverse organisms coexisting in ecotourism locations. Battiste (2005) underscores the significance of viewing ecosystems through the lens of Indigenous Knowledge, asserting that this approach fosters a sense of responsibility toward local communities and their environment, rather than seeking control. Risiro *et al.* (2013) argue for the incorporation of both modern and traditional methods in *environmental management*

to achieve sustainable biodiversity conservation. Indigenous knowledge, as highlighted by Ghorbani and Bakhtiar (2011), and Jardine (2020), complements scientific data in the study of the biophysical world, contributing through direct observations and experiences. Indigenous communities, drawing on their learning, imitation, and observational experiences, offer valuable strategies for *wildlife conservation* (Su *et al.*, 2020). Jardine (2020) emphasizes the role of Indigenous Knowledge in environmental assessment (EA), safeguards local knowledge and science to prevent potential harm to cultural resources and the natural environment. Menzies & Van der Merwe (2013) argue that Indigenous Knowledge promotes environmental awareness, sensitivity, a fundamental understanding of environmental issues, values, and skills to identify and solve environmental problems. Syahrial *et al.* (2021) emphasize that integrating Indigenous Knowledge into education enhances students' and *field guides* conservationist character and supports sustainable regional and national development (Abdi, 2012). Ehlers-Smith *et al.* (2021) highlight the awareness among Indigenous people that their health and spiritual well-being depend on natural resources and ecosystem services. Indigenous ecological knowledge, as described by Aswani *et al.* (2018), is dynamic and co-evolves with social and ecological changes. Mistry *et al.* (2016) propose that coexistence strategies provide opportunities and protect communities against threats. Zidny *et al.* (2020) stress the necessity of incorporating diverse views and experiences about nature into environmental development education, calling for engagement with Indigenous Knowledge, philosophies, guides and methodologies from various cultural backgrounds. Finally, the conservation and enforcement of anti-poaching and nature-based conservation policies, as noted by Francis *et al.* (2019), can be strengthened through the integration of Indigenous Knowledge strategies in ecotourism.

2.4.1.3 Sustainable tourism planning and development, conservation education, reserve designs and management

Ecotourism is responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education (Diamantis, 2010; Robbins *et al.* 2019; TIES, 2015). According to Menzies and Van der Merwe (2013) ecotourism complies with the basic principles of *sustainable development* (module) which means balancing economic, ecological and social

aspects as an integrated whole. The philosophical educational theory in the African perspective is parallel to holism which approves the view of totality or whole view of life, ranging from social features, cultural traits, economic character and political frame (Chambers & Buzinde, 2015; Mwinzi 2015; Saez de Camara, Fernandez & Castillo-Eguskiza, 2021). Saez de Camara *et al.* (2021) suggest that for education to be meaningful and address the socio-cultural issues, ecotourism programs need to include elements of sustainable development in the curriculum and methodologies, and develop courses that foster the necessary capabilities that promote humanistic values and global awareness (Botha, 2010). The integration of IK must give more attention to socio-culture, history and current politics of a place including its ecological and environmental aspects, this approach will enable students to learn authentically beyond their physical environments (Zidny *et al.*, 2020). Sustainable development and indigenous-based learning focus and contribute in environmental studies and ecological education (Roberts *et al.*, 2014). Mekonen (2017) expounds that IK has strong potential in providing; new biological insights, resource management, *conservation education, reserve designs and management, development planning*, environmental assessment and commodity development. Magni (2017) and Diko (2023) state that their holistic worldviews and spiritual practice ensure biological diversity, ecological equilibrium and a healthy environment through sustainable hunting and agricultural practices. Dimitriou (2017) reiterates that ecotourism aims to ensure that resources are managed sustainably so that they are available for the future generations, and (Ehlers-Smith *et al.* 2021) IK is important in the strategic plans for local and global biodiversity (Akena, 2012; Mekonen, 2017) for adaptation, conservation and sustainable use of the biophysical environment.

2.4.2 Approaches to infuse indigenous knowledge to enhance field guiding practice

Bruchac (2014); Chiwanza *et al.* (2013); Eyong (2007); Sanga (2021) posit that indigenous people through their cultural experiences have preserved understandings that guide human-nature and human-human relations in ecosystems. Indigenous peoples are actively engaged with the biodiversity and understand its behaviour (Coria & Calfucura, 2012; Lin *et al.*, 2021; Mekonen, 2017). Education through ecotourism

experiences should be directed towards knowledge and the various ways of living and not limited to only the ecological or natural knowledge (Mondino and Beery, 2019; Tauro *et al.*, 2021). When regulating the field guiding educational curriculum, there should be a recognition of the needs for each destination and its local legislation and knowledge to ensure that they communicate effectively between the host community and visitors (Fortin, Hurst & Grimwood, 2021; Lackey *et al.*, 2019; Lovrentjeva, 2015; Viken *et al.*, 2021). Chambers and Buzinde (2015); Choi *et al.* (2021); Hughes and Scheyvens (2021); Viken *et al.* (2021) and Walter (2010) assert that the ecotourism curricular must be largely based on local knowledge. The guides must ensure that indigenous communities are well informed about ways they can sustain and maintain their cultural values while also adjusting to enhance experiences of visitors (Rani *et al.*, 2010; Viken *et al.*, 2021). WTO (2019) suggests that young people who are motivated to become tour/field guides should be engaged in community guided tours to enable them to learn about local culture and environment as well as how to preserve them adopting their practices and models. Such initiatives are most effective under the leadership and mentorship of experienced local community members and indigenous leaders. These leaders possess deep-rooted knowledge and firsthand experience, making them ideal mentors to impart practical wisdom and cultural insights. This approach not only equips young guides with essential skills but also fosters a profound respect and understanding for the cultural and environmental heritage they will be tasked with preserving (Olaopa and Ogundare, 2023). Stevens, Grimwood and Caton (2019) opine that there is a need for an education that sharpens the ability of field guides and other tourism practitioners to manage different cultures and (Tribe & Liburd, 2016; Viken *et al.*, 2021) to liberate them through sharing their stories and appreciation of their different perspectives. Okada and Kato (2014) emphasise the importance of communicating the current situation of indigenous people, providing accurate information on their history, culture and natural environment. Carr *et al.* (2016); Viken *et al.* (2021) suggest that there should be inclusive planning practices, not only at national level, but also at local levels to ensure that diverse and informed representatives of indigenous communities are included to enhance the success of tourism development and marketing strategies.

Field guides must ensure that they work parallel with indigenous community leaders to avoid inauthentic promotion of cultural performances and inaccurate interpretation of

indigenous culture, compliance with the codes of conduct of the communities, partnerships with local indigenous guides and cultural custodians to engage in co-guided tours to enrich tourists' experiences. This implies curricular enhancement to learn about such partnerships with 'adjunct professors' that would help provide visitors with the spiritual side of a place. Training programs on interpretative skills with local ambassadors have to convey the cultural content respectfully and efficiently (Jardine, 2020; Lethbridge, 2016; Roden, 2017; UNWTO, 2019). Tauro *et al.* (2021) suggest that as much as guides are trained in workshop-style courses or formal education in university courses, the utilisation of non-formal or mixed types of education will be beneficial as it focuses on the development of diverse livelihoods and local empowerment. Guides can learn a vast amount of information from traditional healers who hold knowledge and theories of plant species and their characteristics (Kaya & Seleti, 2013; Mekonen, 2017) and, valuable lessons from hunters about the behaviour of animals. Okada and Kato (2014) share suggestions by tourists visiting Ainu in Japan, that guides need to learn to sing the traditional festival songs, make crafts items and teach tourists, dance the traditional dances and tell Ainu tales. Non-Indigenous field guides often have a limited understanding of Indigenous knowledge and teaching practices, primarily due to the historical marginalization and erasure of Indigenous people in teacher preparation programs and mainstream education in the USA (Auld *et al.*, 2016; Kulago, 2019; Webster & Doyle, 2008). In Bulgaria, they have put together initiatives where stakeholders of ecotourism were strongly represented, non-government organisation and investors in order to resuscitate what had been destroyed as well as protect the natural environment (Choi *et al.*, 2021; Dimitriou, 2017). In Milne Bay Province of Papua New Guinea, there is a recognition of local control of tourism as they offer unique natural features, wildlife and culture that tourists demand (Bohensky *et al.*, 2011). In Zaka (Zimbabwe), forests are conserved partly by controlling the number of people entering the forests through respect of the ancestors that are buried there (Risiro *et al.*, 2013). Those serving and guiding must have cultural sensitivity and cultural competences (UNWTO, 2019; Viken *et al.*, 2021). Kopnina and Shoreman-Ouimet (2017: 315) state that in Namibia the Khoisan are regarded "traditional conservationists because of their knowledge of nature and positioned as primordial people who belong to nature and therefore protect it better than anyone else." They would therefore be better positioned to train the best field guides. In

agreement Ringo (2019) expounds that the San community reflect a history and lifestyle that is in rhythm with the natural environment which they have practiced towards environmental stewardship for generations. Indigenous communities hold more than just memories, imagination and perceptions and feelings towards the world, but they embody knowledge, abilities or capacities to survive and flourish (Battiste, 2005). Bruchac (2014) vouches that the more specialised type knowledge is preserved by gatekeepers who are bestowed with long-standing connections to significant sites and deep experiences. Therefore, dialogues and partnerships must be formed between indigenous populations, civil societies, government, developers and scholars to promote the conservation of indigenous knowledge (Magni, 2017). Yi-Fong (2012) emphasises that communities are not simply victims in need of saving, (Joppe, 2021; Viken *et al.*, 2021) but they can become sites of resistance and resilience in the face of modernization and globalisation. Buesgens (2013); Cebrian-Piqueras *et al.* (2020); Hughes and Scheyvens (2021) assert that when commodifying culture for tourism, ownership of the resources, and of the planning and decision-making by communities is key.

According to UNWTO (2019) field guides are not only responsible for correctly interpreting the culture of indigenous groups or their linkages to nature, but they also play a role as cultural mediators between the communities, local government, tourists and tourism companies. Indigenous communities must ensure that they provide tourism partners with cultural information that can be shared with tourist, provide indigenous cultural awareness training for non-indigenous tour guides, aid in the creation of guidelines or codes of conduct to be followed in their community, ensure that they pinpoint the “off-limits” sites and provide visitors with a respectful opportunity to interact during cultural experiences (Risiro *et al.*, 2013; UNWTO, 2019). This will be possible if visitors and guides are more open and receptive to learn from local knowledge holders, and the locals have learnt to appreciate and value their own knowledge to contribute to development to avoid it being lost or misappropriated (Kaya & Seleti, 2013). Dimitriou (2017) highlights that when there is an appreciation of cultural heritage the number of visitors increase, which in turn creates new revenue sources. Dimitriou (2017); Ringo (2019); Viken *et al.* (2021); Yi-Fong (2012) contend that for ecotourism to be sustainable, it should respect the authenticity of the host community

and preserve their cultural heritage and traditional values and co-operate for better intercultural understanding.

2.5 LIMITATIONS OF INDIGENOUS KNOWLEDGE

Colonisation led to the genocide, termination, assimilation and complete destruction of indigenous peoples' and their way of living, which created systemic injustice and intergenerational trauma which continue today (Moichela, 2017; Su *et al.*, 2020; Thompson *et al.*, 2021). Battiste (2005) elucidates that as a scheme to fulfil the hegemonic ideologies of the colonizers, IK was excluded from schools. There is still great controversy about the degree of inclusion of IK and extent to which indigenous peoples should be allowed to exert control in scientific knowledge and research, and (Haverkort & Reijntjes 2010; Roberts *et al.*, 2014) there are still questions on the qualification of community experts that hold no scientific training, and questions on whether IK can be codified (Battiste, 2005; Bruchac, 2014). The oral character of IK hinders its development to true theoretical knowledge (Senanayake, 2003) as the essence of indigenous knowledge is active in peoples' culture and not in archives nor laboratories (Austin & Hickey, 2011; Botha, 2010). Aswani *et al.* (2018) and Higgs (2011) argue that there is a perception that IK is no longer relevant in the modern contexts, an assumption which leads to a deepening of the loss of local and indigenous ecological knowledge which will continue to impoverish the world socio-culturally (Maila & Loubser, 2003; Su *et al.*, 2020). Su *et al.* (2020) further highlight that IK is no longer being passed on to the younger generations as it used to as communities become modernised. Velempinia *et al.*, (2017) caution that defining and characterizing indigenous people and IK is problematic in Africa because of the diverse subcultural groups. Jackson (2013) warns that conceptualising IK can appear as objectification and commodification, hence concepts that are easily packaged like "ubuntu" see indigenous knowledge as static and frozen in time. Morcom (2017) highlights that the holistic nature of IK leaves the modern teachers in a difficult position because the current educational structure has fundamentally compartmentalised the western way as knowledge is grouped into field. Teachers are faced with the challenge of first accessing this knowledge, then have a clear comprehension of how it relates to what is being taught in class (Abah *et al.*, 2015; Austin & Hickey, 2011). Wimpeenny *et al.* (2021) emphasis that the decolonization of curricular in South Africa will fail if

academics are not decolonised as they themselves have been educated the western way (Madlela, 2022). Abah *et al.* (2015); Battiste (2005) observe that there is a notable absence of academic work in research due to the strained relations between researcher and indigenous peoples. Emeagwali and Dei (2014); Gelinas and Bouchard (2014) and Mistry *et al.* (2016) highlight the challenge of finding an appropriate balance between strategies and epistemologies on the inclusion of IKS into western ways of knowing. What stands as the main differences of these two knowledge systems is how the information is gathered, interpreted and expressed (Knopf, 2015). Due to a lack of IK in their curricular, students tend to memorize foreign theories they lack understanding and application of (Abah *et al.*, 2015).

2.5.1 Limitations to infusing indigenous knowledge to ecotourism curriculum

There is still a lack of focus in the interrelatedness between cultural sustainability as a framework and indigenous identity in academic tourism research (Jackson 2013; Robbins *et al.*, 2019; Zhou & Edelheim, 2011). Cultural sustainability is a comprehensive framework that emphasizes the preservation and promotion of cultural heritage and diversity as integral components of sustainable development (Soini & Birkeland, 2014). Barthel-Bouchier (2012) and Smith (2015) highlight that it involves maintaining cultural traditions, practices, languages, and artifacts while ensuring they adapt and thrive in a rapidly changing world, aiming to provide tourists with authentic cultural experiences. This framework extends beyond mere conservation to include the dynamic evolution of cultures, promoting their relevance and vitality for future generations. The framework recognizes the importance of indigenous knowledge systems in sustainable practices. These systems are often deeply connected to the environment and provide valuable insights into sustainable resource management and ecological balance (Agrawal, 1995). Scheyvens *et al.* (2021) argue that the current definitions and models of indigenous knowledge in academia tend to shed light on tension and power discrepancies (Tribe & Liburd, 2016). In support, Opoku and James (2020) contend that IK might be confronted on a socio-political basis due to the exclusion of traditional authorities in the development process. Jardine (2020) concurs that IK can be communicated, but it may not always be easily translated and interpreted, hence the need for indigenous holders to be part of the interpretation

process. Velempinia *et al.* (2017) argue that even the learning materials rarely reflect content of local knowledge that has direct relevance to where the school are located because they tend to be written by outsiders. Abah *et al.* (2015); Morcom (2017) and Senanayake (2006) reveal that since indigenous knowledge was designed to be transmitted orally through imitation and demonstration, writing it down changes some of its fundamental properties. Further, separating the technical from non-technical and the rational from the non-rational is problematic (Haverkort & Reijntjes, 2010; Senanayake, 2006). Eyong (2007) argues that the central African education planners lack trust for this knowledge in the school curricular and validity in the transition from oral to written culture. Deciphering the quantity and quality of IK that gets incorporated into the curriculum and sifting what is relevant and appropriate to incorporate it is still a challenge (Battiste, 2005; Velempinia *et al.*, 2017). There is a need to develop trust for indigenous knowledge as it has been trialed and experienced with great success due to their holistic relationship with the environment (Madiopera, Ndlovu & Kai, 2023). By contrast, the western curriculum theory is reductionist in nature and compartmentalises knowledge into subject areas (Morcom, 2017). Mwinzi (2015) argues that the prospect of scientific education theory is to isolate, analyses, and describe a problem within education practice such that details are obtained from diverse perspectives of such an education issue and detailed implications are defined using scientific educational theory, which IK does not allow. An outcome of such analysis leads towards discovering the consistencies, abstract propositions, and potential generalisations that can analytically describe the patterns of issues in education practice. The African Academy still faces challenges in decolonising the curricula, teaching strategies, textbooks and democratisation of knowledge itself and the regeneration and adaptation of indigenous epistemologies to suit the current realities (Emeagwali & Dei, 2014).

The curriculum and pedagogy still largely reflect the Eurocentric educational philosophies (Haverkort & Reijntjes, 2010; Morcom, 2017 & Velempinia *et al.*, 2017). Wimpeenny *et al.* (2021) highlight that universities and academic professionals are committed to the inclusion of IKS and its diversity, but remain western-centric. Abah *et al.* (2015) envisage challenges for educational professionals in the paradigm shift as they are expected to mediate the interface between different cultural systems of meanings that continue to prevail in schools. More training is required for professionals

for this integration as they still practice in western-driven school curriculums (Abah *et al.*, 2015; Wimpeenny *et al.*, 2021). Wahl *et al.* (2020) argue that staff and faculty who are non-indigenous don't seem prepared to embrace other ways of knowing and being as part of their own courses. Du Plessis (2021) and Roberts *et al.* (2014) elucidates that another factor is the notion of 'one-size-fits all' curriculum and pedagogy. Wahl *et al.* (2020); Morcom (2017) caution that integrating IKS may lead to it being tokenistic. Battiste (2005); Haverkort and Reijntjes (2010) highlight that indigenous communities have a critical perspective of universities and what they represent, however they do not want to achieve this at the cost of destroying indigenous identities, their languages, values and practices. Wahl *et al.* (2020) warn that indigenising the curriculum is challenging as there is a notion that you can't indigenise something that is not indigenous. Furthering this notion (Madiopera *et al.*, 2023) highlight that the younger generation has developed a negative attitude towards IKS due to it being deemed as primitive by western world views.

2.5.2 Limitations to infusing indigenous knowledge to field guiding

Joppe 2010; Lin *et al.* (2021); Mekonen (2017) argue that scant attention has been paid to familiarise students with the diversity of indigenous populations and their different worldviews, which leads to cultural misappropriation and misrepresentation when promoting IK post-qualification. In support, Razzaq *et al.* (2023) and Mekonen (2017) agree with this as they further state that commercialisation of IK in local communities poses a threat of cultural misappropriation. Abah *et al.* (2015) asserts that IK is assumed to be irrelevant, unscientific and outdated and its practices are limited as (Haverkort & Reijntjes, 2010) they may not always have the answers to present-day challenges. Kaya and Seleti (2013) and Subramanian and Pisupati (2010) concur that graduates tend to be inadequately prepared to meet the challenges post-qualification, which leads to Mondino and Beery (2019) and Tauro *et al.* (2021) arguing that there is a clear need for research and capacity building for guides as visitor educators in all forms of ecotourism.

Ehlers-Smith *et al.* (2021); Liu and Lu (2020) expound that mismanagement of community-based biodiversity conservation efforts also creates an erosion of cultural practices. Haverkort and Reijntjes (2010); Lanzano (2013); Okada and Kato (2014); Scheyvens *et al.* (2021); share the view that tourism targeting heritage sites can have

a negative impact on the host community and its local indigenous culture, especially when heritage trails are not conducted with the guidance and basic information from the local indigenous host. The host may become resentful because visitors destroy these places and the communities, in the process of wanting to experience the exotic (Everingham *et al.*, 2021; Haverkort & Reijntjes, 2010; Hughes & Scheyvens, 2021; Roden, 2017). Even though the goal of ecotourism is raising environmental and cultural awareness among tourists, nothing has been done to change their behaviours (Davidov, 2012; Francis *et al.*, 2019), which creates tension between resistance and adaptability. Another limitation that faces restoration initiatives is that some campaigns cannot successfully involve local communities due to the lack of clarity of the policy design, which tends to neglect local interest (Autonomous University of Barcelona, 2019; Joppe 2010; Travesi, 2017). Su *et al.* (2020) expounds that the use of IK in the absence of modern scientific guidance may indirectly lead to ecosystem imbalances, because IK is the embodiment of primitive biodiversity conservation, lacking the support of modern ecological knowledge.

Dimitriou (2017); Gelinas and Bouchard (2014) and Magni (2017) highlight that power relations are still an issue when taking participatory approaches with non-indigenous participants presenting themselves as experts in the field and oppressing the indigenous population. Risiro *et al.* (2013) and Senanayake (2006) point out that the distribution of IK is fragmentary and generally does not exist in its totality in any one place or individual, therefore IKS management will be a challenge even for field guides. Carr *et al.* (2016) and Maila and Loubser (2003) reveal that not everyone in South Africa identifies with African Indigenous Knowledge Systems (AIKS) even though they may be linked geographically and racially. Tauro *et al.* (2021) highlight that as communities lose their understanding and engagement with IKS, (Viken *et al.*, 2021) implementation of local ecological knowledge, environmental and cultural sensitivity becomes difficult as (Cebrian-Piqueras *et al.*, 2020) knowledge of places is not always translated into ecological awareness and willingness to conserve nature. Indigenous knowledge is often not in taxonomic categories, quantifiable observations and tends to not have validity except in the spiritual realm (Battiste, 2005), which poses challenges for field guides during interpretation.

Bruchac (2014) cautions against the interference with the esoteric knowledge, sacred sites and ritual landscapes during ecotours (Haverkort & Reijntjes, 2010; Liu & Lu, 2020; Sanga, 2021), and Scheyvens *et al.* (2021); Viken *et al.* (2021) and Yi-Fong (2012) stress that commodifying and modernising cultural items and traditional materials has been widely debated as to have the right to produce and use these items to avoid cultural appropriation. In concurrence, Hughes and Scheyvens (2021) and Viken *et al.* (2021) state the implications of commodification and objectification of indigenous cultures and their knowledge through tourism can lead to resentment and non-participation by IK holders.

2.6 THEORETICAL FRAMEWORK

A theory is a statement that explains how things are connected, it is a set of claims about the interrelatedness of concepts, definitions and propositions that explain or predict events (Nkhata *et al.*, 2019; Mwinzi, 2015). Mwinzi (2015) explains that a theory in education depicts characteristics that shape and facilitate the entire process of teaching and learning. Nkhata *et al.* (2019) further describe a theory as a systematic interrelated construct and proposition that is intended to explain and predict a phenomenon or behaviour of interest, within certain boundaries and assumptions. Mwinzi (2015) asserts that a good theory in educational practices must shape to be able to uphold the content of the curriculum, the cultural diversity and heritage, the progressive role of education and the internal interest of the learner. Theories provide the researcher with the understanding of their employability in the research to improve its application, generalization, credibility, validity and reliability (Nkhata, Mkandawire, Nachiyunde, Phiri-Nalube, Kaani, Mulenga, Phiri, Chileshe, Kenny, Sikayomya, Munachaka, Banda, Mulauzi, Serenje-Chipindi & Chipindi, 2019). The theory that was used to underpin this study was the holism theory due to the holistic nature of IK approaches as discussed previously in this chapter. This theory was also implied by authors such as Choi *et al.* (2021); Nkhata *et al.* (2019); Peters and Higgins-Desbiolles (2012) and Toulouse (2016) in the literature review.

2.6.1 The origin of Holism

According to Brush (1984); Nkhata *et al.* (2019) the term “Holism” was coined by Jan Christian Smuts (1870-1950) a South African philosopher, to designate his idea of ultimate reality, although its roots within Western philosophy go back to the German thinker George Wilhelm Friedrich Hegel (1770-1831), who insisted that “the truth is the whole”. Smuts coined the term in the early 20th century; however, it was not until recently that the term has found its way into the vocabulary in social and health sciences and in certain religious approaches (Brush, 1984). According to Nkhata *et al.* (2019) holism is an ancient epistemological term originating from the Greek word ‘holos’ which means all, whole and entire. Holos in comprehension to theory, is the “the whole is greater than the sum of its parts” (Savoiu, Cudanov & Tornjanski, 2023). John (2017) expounds that the notion of holistic education began to take shape in the 1980s in North America as an identifiable field of study and practice.

2.6.2 The definition of Holism

Holism refers to various elements that make up the self, a connection to the community and other living things and cross-curricular learning and interrelations between subjects and topics (Morcom, 2017). Morcom (2017); Nkhata *et al.* (2019); Willis (2022); Zheng *et al.* (2023) posit that holism is a theory with contemporary application that informs parts of a whole that are interconnected such that they cannot exist independently of the whole nor can they be understood without referencing the whole. Moichela (2017) emphasises that holism encompasses the way of thinking and integrates multiple layers of meaning and experiences of human beings.

Morcom (2017) further opines that holism informs an indigenous concept of human nature and the dimensions of the person, which include the emotions, physical, intellect and spirit (Figure 2-1). Lethbridge (2016) and Morcom (2017) further explain that holism informs how people relate to one another, clans, communities, ancestors and other descendants of the earth (living and non-living). In support, Tanaka and Gordon (2011) elucidate that holism is about comprehending the flowing of nature and the intricacies of the earth’s fibres and experiences. Morcom (2017); Opoku and James (2020) also analyse holism as referring to the various elements that make up the self, the connection to a community, other living beings, the earth and the spiritual. Holism

theory is about valuing factors that influence the phenomenon of integrated wholes and consideration of the individual components, which implies that students should be taught as wholes (intellectually, emotionally, spiritually and physically) to derive deeper and meaningful learning (Nkhata *et al.*, 2019). Holism is often spelt as 'wholism', representing its intimate relationship with the concept of wholeness, (Shroff, Deneen & Ng 2011; Willis, 2022) as there is awareness of the unity and mutual interrelation of all beings and events. According to Absolon (2010); Hill and Wilkinson (2004) the wholistic theory encompasses the spiritual, emotional, mental and physical elements (Figure 2-1) of a being and also acknowledges the past, present and future. Gentile and Oswald (2021); Tanaka and Gordon (2011) and Zhao (2022) state that employing a holistic approach in learning means that the framework is developed from a macro perspective and interrelated knowledge elements are integrated (Figures 2-1 and 2-2).

2.6.3 The Holism model and approach

Holism, as articulated by Vizina (2008), is a core principle of Indigenous Knowledge Systems (IKS) that emphasizes the interconnectedness and interdependence of all elements of life. This holistic worldview is fundamental to many Indigenous cultures and influences how knowledge is understood, shared, and applied. The holistic approach lies in the basic model of connectedness, parts and wholeness, it describes the world and everything as whole, consisting of various identical parts which total one unit (Badjanova & Ilisko, 2015). Vizina (2008) highlights the importance of integrating holism into education and practical applications like ecotourism and field guiding. This integration ensures that the transmission of knowledge is aligned with Indigenous perspectives and enhances the overall value and impact of ecotourism and guiding practices.

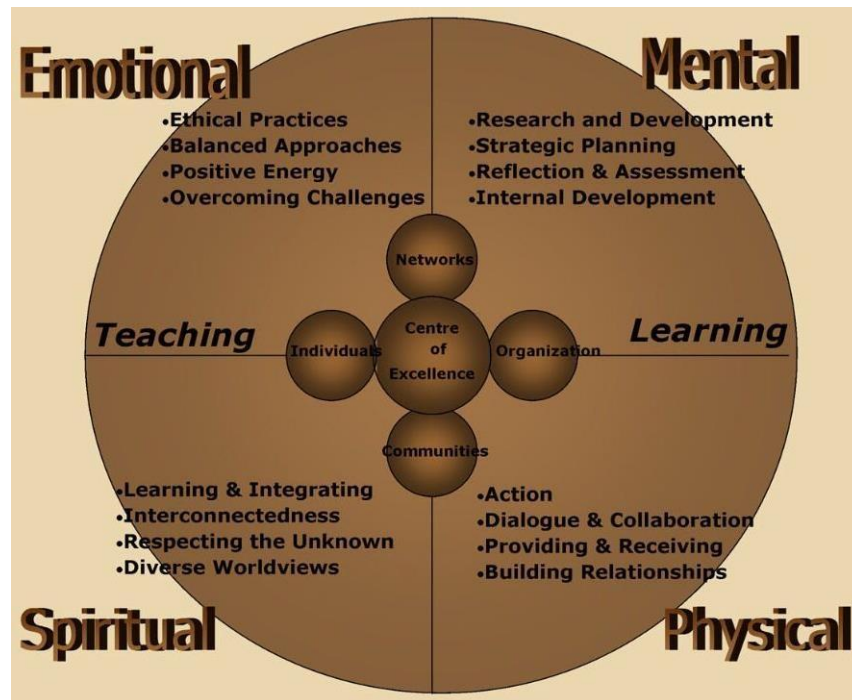


Figure 2-2: Holistic model
Source: Vizina (2008)

The holistic model (Figure 2-2) provides a framework to comprehend thoughts, feels and actions and it puts learners at the centre of their own being, this enables them to relate to what is learnt and the whole world around them (Morcom, 2017). According to Vizina (2008) the holistic approach (Figure 2-2) to learning and field guiding aims to create a sense of balance within structures, processes and outcomes through collaborative working environments using mutually agreed processes. Shroff, Deneen and Ng (2011) elucidate that scientists emphasise the same notion as holism that the whole is greater than the sum of its parts. The model (Figure 2-2) illustrates mutualism between physical, mental, spiritual and emotional learning (both at university & post-qualification as visitors). Lecturers (developers & presenters of the ecotourism curricular) and field guides (interpreters of a location) should understand that they are dealing with holistic people and try to satisfy all the dimensions. It is unrealistic to want to understand the whole IKS without understanding the individual components (Shroff, Deneen & Ng, 2011). Argyros (2012) highlights that most of ancient cultures view all things as interconnected and as complementary dimensions of one unit, that work and act together to reach a state of intelligence.

Indigenous educational philosophy and holism are inextricably linked; therefore, it is fundamental to create an environment that is favourable to meaningful and authentic indigenous learning (Akena, 2012; Morcom, 2017). The holistic theory as an approach in education and field guiding (in the context of this study) highlights the need to learn about oneself, develop healthy relationships with the society, experience social and emotional development and the ability to view beauty and experience wholeness (John, 2017). In the view of Ismail, Ali and Us (2022) the holistic model is used to develop intellectual potential, affective potential and holistic thinking potential. Higgs (2011) emphasises that the notion of Ubuntu as being holistic, “I am, because we are; and since we are, therefore I am,” implies that whatever happens to the group affects the individual and vice versa. Luo and Chan (2023) underscore that holism is not only for the benefits of students but holds potential for contributing to the country’s development.

2.6.4 The link between holism and this study

In the view of Savoii, Cudanov and Tornjanski (2023) holism correlates all information and connections into degree of relevance to the phenomena, which is in line with the thinking of Gope *et al.* (2017) that indigenous knowledge is a way of knowing, seeing, and thinking which is passed down orally from generation to generation. According to Reijerkerk and Nyitray (2022) indigenous epistemologies are relational, promoting the interconnection between sacred and secular to lead to holism. Bruchac (2014); Zhao (2022) highlight that IK is inherently holistic and integrative as it is based in sensory awareness and complex human experience and relationships among multiple organisms in their ecosystem. Indigenous knowledge is broad, holistic, place-based, relational and intergenerational, and can take tangible or less tangible forms (Jardine, 2020). Morcom (2017) agrees that IK is holistic in a sense that unlike western perspectives that see knowledge as compartmentalised into subject areas (Gope *et al.*, 2017), IK sees knowledge as whole and experienced through a variety of means which are intrinsically related. Luo and Chan (2023) concur that holism angle in education enables or promotes students learning a variation of skills and ways of knowing, which enhances their personal and professional development,

Ecotourism is holistic in its nature as it unites conservation, communities, cultures and sustainable principles (Lackey *et al.*, 2019). If the aim is to tend the planet back to a

healthier state and continue its heritage of biodiversity, then it has to be respected holistically using all forms of knowledge (Battiste, 2005; Gadgil *et al.*, 2021). Coria and Calfucura (2012); Shroff, Deneen and Ng (2011) and Subramanian and Pisupati (2010) reveal that from an epistemological view, indigenous communities base their decisions and actions on clear concepts and principles with the interrelatedness of all things in nature. Roden (2017) states that indigenous peoples organise their efforts to strive and share a holistic model of livelihood that respects the creator, the earth and enhances sustainability. Therefore, IK is systematic, holistic and complete with its own concepts of epistemologies, philosophies and scientific and logical validity and not just a collection of stories, ceremonies and objects (Battiste, 2005; Gelinas & Bouchard 2014). Abah *et al.* (2015) further point out that IK encompasses the technology, social, economic and philosophical, learning and governance of the communities. Indigenous ways of knowing are holistic as they conceive life in terms of three interrelated and inseparable domains; the natural world, the social world and the spiritual world (Haverkort & Reijntjes, 2010). In agreement, Choi *et al.* (2021) explain that connectivity refers to the connection between socio-ecological components in a system that improves its resilience by exchanging the materials, energy and information required to maintain and develop it individually and collectively.

Educational programmes that infuse local knowledge and links to the land in real life context and experiences are paramount steps in holistic learning (Roberts *et al.* 2014; Pang *et al.* 2021). To create an inclusive curriculum there needs to be an openness to self and others with respect of differences (Wimpeenny *et al.*, 2021). Teachers and students must develop and employ a holistic picture of each subject and combine knowledge, skills and methodologies to gain a comprehensive and transferable understanding of knowledge (Zhao, 2022). Gelinas and Bouchard (2014); Lin *et al.* (2021) state that indigenous traditions emphasise an ontology that all is connected and all are spirits with intrinsic values and intelligence, therefore, (Emeagwali & Dei 2014) IKS emphasises a holistic view and understanding of the world and human beings. Indigenous academics have been tasked to affirm and activate the holistic paradigm of IK which has been systematically excluded from contemporary educational institutions with its wealth and rich indigenous worldviews, teachings and experiences (Battiste, 2005). Nevhudoli and Netshandama (2023) assert that a return to the holistic ways of knowing and practicing will aid in reframing the academics, lectures and

students into co-created ways of living and harmony between people, places and experiences in the tourism industry (Blaikie *et al.*, 2020).

2.7 CONCLUSION

This chapter discussed the concept of indigenous knowledge systems and its place in ecotourism curricular and field guiding which substantiates the problem that this study sought to address. It further analysed the benefits and limitations of IKS infusion into the ecotourism curriculum and field guiding and the approaches that can be taken to facilitate the infusion. Lastly, the chapter expanded on the holism theory that was used to buttress the study. The links between the holism theory and the study were explored. In the chapter that follows the study elaborates on the methodological choices made by the researcher to answer the research questions, satisfy the objectives of the study and finally achieve the aim.

CHAPTER THREE

RESEARCH METHODOLOGY AND DESIGN

3.1 INTRODUCTION

Mishra and Alok (2017) and Pandey and Pandey (2015) explain that research is an essential and powerful systematic art of investigating information and knowledge on a topic in particular. Pandey and Pandey (2015) further break it down as re-search which entails searching again to gain new perspectives on knowledge and facts that already exists. According to Rehman and Alharthi (2016) the research methodology is an organised, theoretically informed approach to data collection. The methodology in a study entails the critical analysis of the research strategy, processes, and design (Jilcha, 2019; Kelly & Cordeiro, 2020; Rehman & Alharthi, 2016). In addition, this chapter explores the type of data is needed for a study and the best type of data collection tools to use (Kabir, 2016; Kasim & Antwi, 2015; Rehman & Alharthi, 2016). Jilcha (2019) also elucidates that the research design is a significant section as it explains the choices made regarding the research approach and determines how relevant information for the study will be obtained (Parveen & Showkat, 2017).

3.2 RESEARCH ONTOLOGY, EPISTEMOLOGY AND PARADIGM

Rehman and Alharthi (2016) highlight that understanding the ontological and epistemological beliefs of the researchers aids in comprehending the relevance and import of the study. Brierley (2017) asserts that it is vital to identify the particular worldview of the topic being studied and how to undertake the research. In concurrence, Rehman and Alharthi (2016) explain the importance of understanding and articulating a standpoint about the nature of reality, through ontology, epistemology, methodology, and methods. Kivunja and Kuyini (2017) further state that knowledge is acquired based on epistemology, ontology, and methodology, which together referred to as the paradigm.

3.2.1 Research ontology

Ontology deals with beliefs about reality through the topic's nature of existence in order to demonstrate that something makes sense or is real through research and familiarity (Kivunja and Kuyini 2017). The ontological approach of this study is the relativist approach. Relativism is the view that truth and falsity, right and wrong, standards of reasoning, and procedures of justification are products of differing conventions and frameworks of assessment and that their authority is confined to the context giving rise to them (Stanford Encyclopedia of Philosophy, 2020). As the researcher believes that reality can be understood intersubjectively, basing the meanings and understanding on social and experiential levels. Relativism is relevant to this study because it investigated a sensitive issue of indigenous knowledge.

3.2.2 Research epistemology

Epistemology encompasses how a researcher intends to uncover knowledge to reach reality, how the researcher views the world, and how that perspective or assumption can be communicated to other human beings (Alharahsheh & Pius, 2020; Rehman & Alharthi, 2016). Kivunja and Kuyini (2017) highlight that epistemology is rooted in the Greek word "Episteme" which means knowledge. In the context of research, epistemology is how one acquires knowledge, attains the truth or reality and what constitutes to knowledge within the researcher's world (Rehman & Alharthi, 2016). Briefly, epistemology is how reality is perceived by the researcher (Alharahsheh & Pius, 2020). Epistemology is the nature of the connection between the researcher and the nature of human knowledge and understanding assimilated through various types of methods of investigation in order to wholly understand the phenomenon under investigation (Antwi & Hamza, 2015). SavoIU, Cudanov and Tornjanski (2023) express that holism from an epistemological point, cannot be applied in isolation, but in interdisciplinary and multifaceted research, as applied in this study. This study has uncovered knowledge through collecting data from a group of sub-populations deemed knowledgeable and experienced in ecotourism, because of their involvement as students, lecturers and practitioners (field guides).

3.2.3 Research paradigm

A paradigm is the interconnection of ontology, epistemology, methodology and methods (Alharahsheh & Pius, 2020; Ghiara, 2020). The paradigm of choice has a significant role in every decision taken in the process of the research, the methodological choice and design, the selection of the research population and influences the data collection process and analysis (Antwi & Hamza 2015; Kivunja & Kuyini, 2017). The paradigm of choice for the study was the interpretivist paradigm. Interpretative paradigm is corollary of interpretive ontology (anti-foundationalist) as it pertains to believing in approaching knowledge utilising different angles and multiple socially constructed realities (Alharahsheh & Pius, 2020; Madlela, 2022; Pham, 2018).

3.3 RESEARCH METHODOLOGY AND DESIGN

The overall process and flow of the research is indicated in the research methodology and design (Jilcha, 2019), it is the conceptual lens through which the researcher examines the methodological framework of the research processes by formulating the research methods to be utilised and the analysis procedure of the obtained data (Kivunja & Kuyini, 2017; Jilcha, 2019). Jilcha (2019) further elaborates that this section lays the foundation on the sample, data collection tools and processes to assist the researcher to maintaining the flow and structure of the research.

3.3.1 Research methodology

Mishra and Alok (2017) differentiates research methods as the techniques taken when conducting research (Alharahsheh & Pius, 2020) and research methodology as the actual approach to solving the research problems. Alharahsheh and Pius (2020); Jilcha (2019) and Kivunja and Kuyini (2017) articulate that methodology is the logic and flow systems and processes outlining the carrying out of the research, including the assumptions, limitations encountered and how to mitigate them in order to achieve the objectives of the study. The methodology selected was qualitative driven by the objectives of the study. The researcher used interviews and questionnaire composed of qualitative question items (annexures F, G and H).

3.3.2 Research design

According to Blessing, Chakrabarti and Wallace (1995); Mishra and Alok (2017) and Pandey and Pandey (2015) a research design is the blueprint or map of the general procedure that the researcher chooses to integrate in various areas of the study in a logical and consistent way, outlining the data collection, tools and design, collection process and the steps taken to analyse the data obtained.

3.3.2.1 Design

A case study design as an empirical inquiry which investigates a phenomenon in its real-life context (Yin, 2009). This design tends to harmonize with qualitative studies allowing a researcher to explore in-depth a phenomenon under investigation in settings bound by location and activity (Priya, 2021) as was the case in this study. Welman, Kruger and Mitchell (2005: 25) point out that in a case study design, the researcher is directed by the “uniqueness and idiosyncrasy” of each case. It was for this reason that this design was selected as it would allow the researcher to investigate the dynamics pertaining in each of the selected cases. The study was also cross-sectional in design (meaning that data were collected at a specific point in time), directed to a particular cohort of ecotourism students at the two selected universities, as well as the organisations they used to place the students for WIL. Further, the design of this study was deductive, as the researcher started by developing the conceptual and theoretical structures, then collected empirical data to test these structures (Welman, *et al.*, 2005).

3.4 POPULATION, SAMPLING METHODS AND SAMPLE SIZE

According to Smith and Albaum (2010), Pandey and Pandey (2015) and Taherdoost (2016) the first step is defining the population and sample that will be investigated. A population is the totality of all units or elements (individuals or organisations etc.) which a researcher intends to study. A researcher cannot collect data from all cases due to time constraints and lack of resources hence the need for sampling, sampling the population reduces the number of cases (Taherdoost, 2016). Pandey and Pandey (2015) further explain sampling designs can either be based on probability, where there is a known probability of the inclusion of the sample (Iliyasu & Etikan 2021); or based

on non-probability, where there is no requirement of the list of population (Iliyasu & Etikan 2021).

3.4.1 Research population

The target population for this study were participants from selected universities offering ecotourism programs. This encompasses the ecotourism academic lecturers, 3rd year ecotourism students who had completed their WIL, and lastly, field guides as practitioners.

3.4.2 Sampling methods

The selection of universities for this study was guided by a non-probability sampling approach, a research method where samples are chosen based on non-random criteria. This method was particularly suitable for this study because the focus was on universities that offer ecotourism in their curricula, allowing the researcher to delve into how each institution might best integrate Indigenous Knowledge Systems (IKS) into their programs. The universities selected—Durban University of Technology (DUT) and Vaal University of Technology (VUT)—were specifically chosen because they include ecotourism in their academic offerings. This was a critical criterion as it directly aligned with the study's objective to explore the integration of IKS into ecotourism education. The researcher employed judgmental or purposive sampling to identify participants who would provide the most valuable insights for the study. As Palinkas et al. (2015) highlight, this method involves selecting individuals who meet specific criteria deemed essential for addressing the research questions effectively. Lecturers from the Department of Ecotourism at DUT and VUT were key participants because they play a pivotal role in shaping and delivering the curriculum. Their perspectives are crucial in understanding how IKS can be integrated into academic programs. The focus was on those directly involved in teaching ecotourism, as they are best positioned to discuss current curricular content and potential areas for integrating IKS. Third-year students who had completed their Work-Integrated Learning (WIL) were targeted because their practical experience in the field provided valuable insights into the application and relevance of IKS in real-world settings. These students were selected based on their hands-on experience in the ecotourism industry, which likely exposed them to scenarios where IKS could be beneficial. Field guides working in these regions

were selected to examine their post-qualification experiences with indigenous knowledge in their professional practice. A combination of purposive sampling and snowball sampling was used. Initial participants were selected based on their relevance to the study, and they then referred additional guides who could provide further insights. By deliberately choosing universities and participants aligned with the study's goals, the researcher could obtain focused and relevant data on the integration of IKS in ecotourism education and practice. The purposive selection allowed for an in-depth exploration of specific groups who are directly involved in or impacted by ecotourism and the incorporation of IKS. The selection of practicing field guides offered practical perspectives on how IKS is currently being utilized in the field, which is essential for understanding its role in post-qualification professional practice. The non-probability sampling method, particularly the use of purposive and snowball sampling techniques, was instrumental in selecting the universities and participants for this study. By focusing on those most likely to contribute valuable insights, the research effectively examined the potential for integrating Indigenous Knowledge Systems into ecotourism education and practice.

By strategically selecting the universities and participants, the study could capture comprehensive insights into how IKS can be integrated into ecotourism curricula and post-qualification practices, offering valuable implications for educational institutions and industry practitioners alike.

3.4.3 Sample size

The sub-samples were selected from two targeted universities. Seven lectures were approached with only four ecotourism lectures were responding to participate from DUT and Six lectures approached with only three response from VUT. Also, eight key informant ecotourism students (those who had completed their WIL) were selected to represent each university out of thirty-two students and further snowballed as the study progressed with a total of eight students responding to the questionnaire. Lastly, the study started with twelve eleven practising field guides from each university and further snowballed more participants through referrals. This made a total of twenty-six study participants.

3.5 DATA COLLECTION AND DATA ANALYSIS

Data collection, according to Jameel and Majid (2018), is the process of gathering information from the sampled research participants, they further explain that data can be collected from primary sources (participants), and from secondary sources (published literature) as done in chapter 2.

3.5.1 Data collection methods

Pandey and Pandey (2015) state that data can be collected through various tools and techniques and the tools selected may vary in design and interpretation, however, the type of information required determines the suitable collection tool. The collected data using primary data sources and secondary data sources.

For this study on integrating Indigenous Knowledge Systems (IKS) into ecotourism, a combination of virtual and physical interviews was conducted with lecturers and field guides. The approach varied based on the participants' location and availability, ensuring comprehensive and flexible data collection. Microsoft Teams was used for conducting virtual interviews with lecturers and WhatsApp Video calls was used for field guides who were based in Vanderbijlpark and in Midlands. These platform were chosen for their robust features, including the ability to record conversations, share screens, and facilitate clear communication, making it ideal for in-depth qualitative interviews. Lecturers from the Department of Ecotourism and practicing field guides were interviewed virtually. These interviews lasted between 45 to 60 minutes, depending on the depth of responses and the participants' availability. The virtual interviews conducted on MS Teams were recorded directly through MS Teams, providing high-quality audio and video recordings. Each recording was meticulously transcribed immediately after the session to ensure accuracy and capture all nuances of the discussion. This step was critical for maintaining the integrity of the data and aiding in subsequent analysis. Concurrently, the researcher took detailed notes to capture key points, immediate reflections, and contextual information that might not be fully evident in the recordings. Physical interviews with some of the lecturers from the Midlands Campus were conducted in their offices. This provided a comfortable and familiar environment, conducive to open and thorough discussions. For local field

guides, the interviews were conducted in various settings convenient for the participants, including their workplaces or nearby locations.

Questionnaires were suitable for the student population as the sample number was bigger, and the researcher was unable to have face-to-face interaction with all of them. The questionnaires were emailed to the participants thirty-two students after the research sourced their contact details from the academic departments. Participants who completed their questionnaires on Google Forms, simply sent them back after completion, which also facilitated data analysis. Completed questionnaires were emailed back to the researcher. The data collected supported the secondary data collected through literature review. The data collected focused on the following titles and keywords: ecotourism, ecotourism curriculum, indigenous knowledge and field guiding

3.5.2 Data analysis

Data were analysed through the thematic analysis, as most of data was in interpretive and descriptive form. Nowell *et al.* (2017) define thematic analysis as a method for identifying, analysing, organising, describing and reporting themes found within a set of data. NVIVO x64.exe was used to capture and analyse data from the transcripts and questionnaires. Data from the three sub-samples (lecturers, students and field guides) aggregated especially in the case of similar questions. After the themes have been formulated and the researcher transcribed interview recordings into useable clean form, whilst maintaining internal consistency and proof reading the transcribed data with the recordings. The interview notes and questionnaires were assessed for repetitions or keywords. This task involved identifying, coding, and assigning themes to the data. The data were then read through several times to organise it into themes and removed any repetitions. The same was done for the questionnaires, and invalid responses or unanswered questions were noted. Responses were considered invalid if they were incomplete, nonsensical, or contained contradictory information. For example, if a participant provided answers that did not align logically with the questions asked, those responses were flagged. Invalid responses were systematically noted. This involved marking the specific questions that were unanswered or improperly answered. This step was crucial for maintaining the integrity of the data set and ensuring that only reliable data were used in the analysis. Unanswered questions were

categorized to understand the extent and pattern of missing data. This helped in identifying whether specific questions were frequently left unanswered, which could indicate issues with question clarity or participant understanding. From there the researcher searched through the transcribed data again for words or statements that linked with the themes. This process was applied to every interview transcript and every questionnaire response. Afterwards, the data was examined to establish any patterns and presented through network display accompanied by reflective memos.

3.6 VALIDITY AND RELIABILITY

Brink (1993), Cypress (2017) and Kasim and Antwi (2015) point out that validity and reliability are key aspects in research, as this differentiates a good research and poorly conducted research. They further mention that the quality of the research is evident in the trustworthiness, truthfulness, consistency and confirmability of the data collected and how it is interpreted and how the researcher followed all the steps of the research process without subjectivity. Kivunja and Kuyini (2017) emphasize the importance of the researcher upholding high moral values when collecting and interpreting data by ensuring that data is analysed and interpreted truthfully, and that participants are treated fairly and their rights are upheld (Cypress, 2017). Brink (1993) also highlights that a research design that is not carried out with reliability and validity puts the research findings at risk of being nullified. Cypress (2017) asserts that the researcher must analyse the data with strict precision and present it as accurate as possible to maintain trustworthiness and credibility and reliability of the study findings.

3.6.1 Validity

To ensure and maintain validity in this study the data collection tools selected were framed to measure exactly what the study was investigating, by ensuring that the questions were linked to the aim and objectives of the study stated in chapter 1. Internal validity was maintained by formulating questions as clear as possible. When analysing the data, the researcher ensured to not impose own perceptions and desired outcome to the findings. The data were observed, analysed and interpreted as received without any changes or add-ons from the researcher. To maintain internal validity, the

researcher ensured that during interviews, the internal factors influencing the interviewees such as fatigue, motivation, anxiety, mood, attention span and state of health were monitored by keeping the duration to a minimum possible. Further, all data collection instruments were pilot-tested to relevant population groups prior full-scale data collection as a requirement of the Ethics Committee of the study institution prior to issuing full ethical clearance (Annexure A, IREC 153/22). Pilot-testing assisted the researcher to identify and correct ambiguities as well as invalid questions in the instruments. These were amended before full-scale data collection.

3.6.2 Reliability

As reliability is about consistency of a measure, in this study the research distributed the same questionnaire to all student participants selected, and interviews with lectures were conducted using the same interview schedule. Interviews with field guides were conducted using the same guide developed for them. All the responses received from the 3 sample groups received the same treatment for coding and analysis. The same key words and phrases were sought out on all transcripts and questionnaire responses, themes that were developed while analysing the data, were also checked throughout all the responses received. Non-response, invalid answers and unclear answers were noted and removed. The noted invalid and unanswered questions were accounted for during data analysis. This meant that analyses were conducted using only the valid and complete responses, ensuring the results were based on reliable data. The questionnaire data were cross-verified with the notes taken during the initial review to ensure no invalid responses were overlooked. The process of noting and handling invalid responses was documented to ensure transparency and replicability. This documentation helped in maintaining a clear audit trail for the research.

3.7 ETHICAL CONSIDERATIONS

According to Kivunja and Kuyini (2017) the ethical considerations in research involve defining, evaluating and understanding concepts of right and wrong behaviour prior and post research. They further mention that it is the consideration of the value of the research, the participants, the data and the audience that we will report our research

to. Jameel and Majid (2018) expound that it is vital to ensure that the researcher knows what one has the right to do and what is ethical to do by considering the ethical and moral consequences around how the study is conducted and the findings are presented. Sanjari, Bahramnezhad, Fomani, Shoghi and Cheraghi (2014) further state the researcher must take note of anonymity, confidentiality, informed consent and researchers' potential impact on the participants.

Firstly, the researcher had to obtain the ethical clearance letter from the university of registration (Annexure A, ethical clearance number IREC 153/22) prior to data collection. The researcher completed the Training and Resources in Research Ethics Evaluation [TRREE] (Annexure E), to ensure that the study adheres to the principles of research ethics and that there is protection of the rights and interests of the human participants in this study. Thirdly, permission letter were acquired to conduct the study (Annexures C and D). The research also ensured informed consent of the participants by attaching a letter of information when recruiting participants as well as to each questionnaire sent to the student participants (Annexure B). The letter of information gave the background of the study and an outline of procedure was sent accompanied by a consent form confirming their willingness to participate in the study. All participants provided a signed informed consent form prior to completing the questionnaire and prior to interviews.

To ensure confidentiality and anonymity, participants' personal information was not collected and their names were not disclosed to keep the study out of litigation. Some of the data were aggregated during analysis to ensure that it could not be traced back to any particular individuals. Data would be securely stored in encrypted files for further usage if need arose, and after a period of 5 years the files would be deleted as per the requirements of the university.

3.8 CONCLUSION

This chapter outlined the research strategy; research methodology and design followed throughout this study, the target population of the study was discussed and how it was sampled. This chapter further outlined the process of how data was collected and through which data collection tools, it further explains how the qualitative

data was dissembled and analysed. Validity and reliability in the research processes and data was also discussed as to how it will be ensured. Lastly, this chapter elaborated on the ethical consideration such as ethical clearance, consent forms, confidentiality and anonymity and data storage were discussed.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

Chapter three laid the groundwork for this research, delineating the research design, methodology, the structure of the research, and the selection of the research population and sample. The current chapter stands as the nexus where collected data is not merely presented but meticulously scrutinised, analysed, and interpreted. It is in this realm that raw data transforms into cogent information, providing the research with substance and coherence. Recognising the paramount importance of this phase, Kumar (2023) aptly characterises the analysis and interpretation of data as the pinnacle of the research endeavour. This chapter serves as the epicentre where disparate data points are synthesised into a coherent narrative, aligning seamlessly with the formulated research objectives and theoretical framework.

By dissecting the data and interweaving it with the broader context of the study, this chapter propels the research forward, establishing a continuum from the initial objectives through to the derived results. The upcoming sections will delve into the intricacies of data analysis and interpretation, shedding light on the emergent patterns, correlations, and insights that encapsulate the essence of the research journey.

4.2 RESPONSE RATE

A response rate, as defined by Lund (2023), denotes the proportion of participants who engaged in a study relative to the total sample initially approached or targeted for data collection. In the context of this research, communication was initiated with eight ecotourism lecturers from DUT, resulting in four participating in Microsoft Teams interviews. Moving to VUT, four ecotourism lecturers were contacted, with three engaging in Microsoft Teams interviews, and one providing no response.

The student outreach involved emailing thirty-nine students from DUT and contacting forty-four students from VUT, resulting in eight recorded responses through the Google Forms questionnaire. Despite two students consenting to participate via email, their completed questionnaires were not received, prompting a follow-up with no success.

For the field guides, twelve industry partners in field guides were contacted through WhatsApp, a platform chosen for its accessibility. Eleven guides agreed to participate after receiving the information and consent form. Correspondence was primarily through text messages (seven responses) and WhatsApp voice recordings (four responses), with the latter transcribed for streamlined analysis.

4.3 DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

The use of qualitative research methods is to provide in-depth interpretation of the factors involved in the study (Chawla *et al.*, 2023) AlYahmady and Alabri (2013) highlight that in this section, the relationship between responses and the objectives is pursued to develop and understanding on the data and the phenomenon being researched. In this chapter, data were presented as received from the participants, with mild grammatical corrections to ensure there was cohesiveness with the responses. Data were analysed systematically through the use of NVivo, which increases the reliability and validity of the data collected and analysed (Feng & Behar-Horenstein, 2019; Lumivero, 2022; Kraiwanit, Limna & Siripipatthanakul, 2023). The use of visual analysis methods assists the data to be summarised and results easy to interpret and understand (Thiyam, Singh & Bora, 2023)

4.3.1 Understanding of the term “Ecotourism”

The question was answered by all participants - eight ecotourism student participants from DUT and VUT who had completed their work-integrated learning, seven ecotourism lecture participants from both DUT and VUT, lastly eleven industry partners in field guides and all their responses were qualitative. Content analysis was used in this case. Responses were analysed as received and, in some cases, edited to make more sense without changing the meaning.

A word cloud was also used to depict their responses of their understanding of the term ecotourism. A word cloud, also known as a text cloud or tag cloud, is a visual representation of text data. Typically, it depicts words in varying sizes, where the size of each word indicates its frequency or importance within the given text. Word clouds are used to highlight prominent terms and provide a quick visual summary of the most significant words in a body of text (Heimerl et.al. 2014).

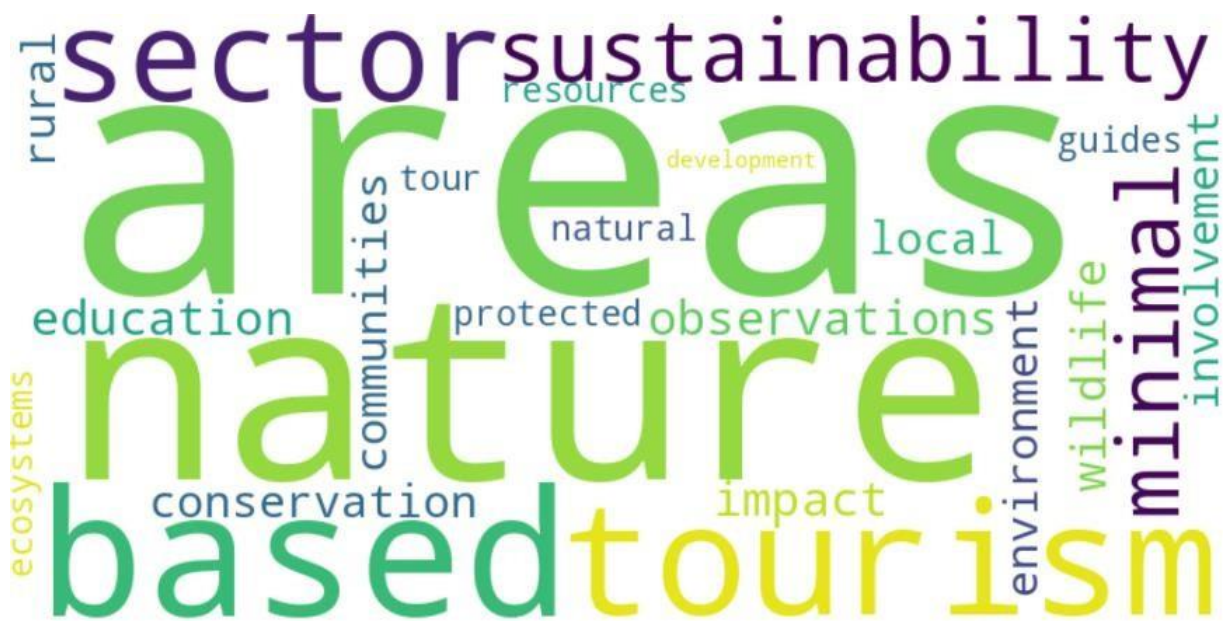


Figure 4-1: Definition of ecotourism

Figure 4-1 captures the keywords and their relationships as used by all three sub-populations to share their understanding of ecotourism. As Figure 4-1 illustrates the following words emerged: nature-based, tourism sector, sustainability, minimal impact, education, observations, wildlife, conservation, involvement of local communities, rural areas, environment, protected areas, natural resources, tour guides, ecosystems, and development. Some of these words were also captured in the definition of the concept in chapter 1 (1.7.2). Eight students responded to this question and their responses are captured below:

S1- Ecotourism is a form of responsible travel to natural areas such as protected areas, nature-based tourism attractions and local indigenous residents, to ensure socio, economic, cultural, and educational impacts. Ecotourism deals with the conservation of nature to mitigate harm.

S2- Ecotourism is a form of sustainable tourism that focuses on responsible travel to natural areas while conserving the environment and benefiting local

communities. It aims to minimize the negative impact on ecosystems and promote conservation efforts, often involving activities like wildlife viewing, hiking, and education about environmental issues. Ecotourism seeks to strike a balance between tourism and the preservation of natural resources.

S4-Strong emphasis on ensuring the protection of flora and fauna in the local area, intended to support conservation efforts and observe wildlife, and cultural heritage while sustaining the wellbeing of local people through interpretation and education.

Seven lecturers from both universities responded to the same question.

L1- I think the common points would be ecotourism is a nature-based travel and it has very strong elements of enforcing minimal impacts in the natural environment. It also has an element of environmental education so ecotourists, aside from having a memorable and meaningful experience, they also need to be educated about the natural environment. The last aspect would be the spinoff of ecotourism must benefit communities surrounding wherever the ecotourism initiative is taking place. The key points here then would be nature-based travel, components of environmental education for the ecotourist and minimal impact, all types of tourism will have an impact on the environment, so minimal impact on the environment and wherever the ecotourism initiative or project is taking place it must benefit the community in terms of jobs perhaps job creation, improvement of infrastructure etc.

L2- My understanding of the term ecotourism, its tourism that is ecologically based or it is an ecologically influence that involves responsible travel to natural areas. Conserving the environment while visiting those areas. Also improving the well-being of the local people. It has three spheres, travellers who are responsible who are conserving the environment wherever they go, they also influence wherever they go, they influence environmental awareness as well as ensuring that they benefit those communities that they visit because we know that the natural areas are mostly based in the wilderness areas or in remote areas where we find rural communities, who are less fortunate. They tend to benefit them in a way. So that could be my definition.

L3- Ecotourism is responsible travel to natural areas that focuses on conserving the natural environment, sustaining the well-being of the local community and ecotourism is about the interpretation and education. It is identified by the pillars of sustainability which is sociocultural development, environment conservation and preservation and economic development. It is a form of responsible tourism.

Eleven tour guides also responded to this question and their responses are captured below:

F1- Ecotourism on my understanding ecotourism is tourism that is based in the nature or natural ecosystems and environment. It could be any form of tourism that is done in a natural environment.

F2- what do we understand on tourism as a guide well for me, it is nature-based tourism that focuses on preservation, conservation, and interpretation of the local and natural environment.

F3- It's a natural environmental or place of nature where tourist can come and observe rules or the plant life and in its natural form and learn from it and see how it all works.

Responses from students, lectures and tour guides seemed to concur with The International Ecotourism Society (2015, 2021) and Barwicka (2018) in Chapter 1 that ecotourism is a form of responsible and sustainable travel with the intent of preservation, conservation, and education about the importance of the local flora and fauna, whilst fostering socio-economic development and community engagement. Their understanding is also in line with Bohensky *et al.* (2011); Coria and Calfucura (2012); and Zhou and Eldelheim (2021) in Chapter 2 that ecotourism involves local communities in conservation, preserving culture and ecological wisdom.

4.3.2 Understanding of the term “Indigenous Knowledge”

The question was answered by all participants, and their responses were qualitative. A tree word analysis was used in this case. A tree word analysis (Figure 4-2) was used to visualize the frequency of keywords in relation to each other. The responses from the students, lectures, and field guides collectively provide a comprehensive understanding of indigenous knowledge, highlighting its importance and characteristics. The consensus across the three groups of participants is that indigenous knowledge is a form of local, informal wisdom passed down through generations within specific communities. The shared perspectives emphasize the cultural, social, and environmental roots of this knowledge, often transmitted orally within indigenous communities, which concurred with the explanations provided by Abah *et al.* (2015); Zidny *et al.* (2020) and Turner *et al.* (2022) in chapter 2 that indigenous knowledge as a valuable resource for understanding and preserving cultural heritage, as well as for sustainable practices, aligns with global discussions on the importance of local wisdom in addressing contemporary challenges.

Students' perspectives underlined the uniqueness and accumulated nature of indigenous knowledge, encompassing practices, skills, and innovations specific to particular indigenous communities. This knowledge is deeply embedded in the cultural, social, and environmental contexts, illustrating the interconnectedness between the community and its surroundings.

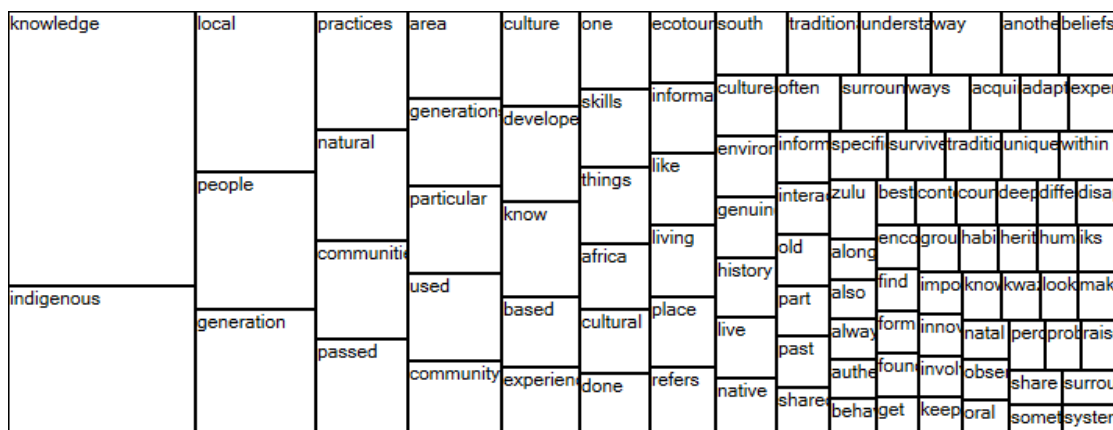


Figure 4-2: Understanding of Indigenous knowledge

Lecturers further emphasized the informal nature of indigenous knowledge, acquired through cultural traditions, experiences, and interactions within a community. The genuine and unaltered nature of this knowledge is stressed, emphasizing its authenticity and the necessity of being in the native area to fully grasp its depth.

Field guides provided practical insights into the application of indigenous knowledge, describing it as information based on the native people of an area. This knowledge, often shared through folklore, values, and skills, is seen as vital for understanding local ecosystems and survival strategies.

The collective responses also highlight common themes, such as the importance of community-based or culture-based knowledge, the passing down of information through family trees or community elders, and the connection between indigenous knowledge and the preservation of cultural heritage which strengthens the validity of the findings and positions them within the broader discourse on indigenous knowledge (Safakish, 2015; Razzaq *et al.*, 2023) in chapter 1.

The responses provided by students, lectures, and field guides contribute to a nuanced and multifaceted understanding of indigenous knowledge. This collective perspective serves as a foundation for the subsequent exploration of integrating indigenous knowledge into the ecotourism curriculum, emphasizing the need for a respectful and community-involved approach.

4.3.3 Learning of indigenous knowledge in the ecotourism curriculum

The question was answered by eight student participants. Their responses were quantitative (Figure 4-3). The majority of student participants (about 75%) shared that IK was covered in their ecotourism curriculum, with about 25% sharing a dissenting view. Their response was in contradiction to the views shared by Assefa (2021); Hlengwa (2019); Austin and Hickey (2011) and Du Plessis (2021) in chapters 1 and 2 that indigenous knowledge is often relegated to the peripheral in the modern classroom.

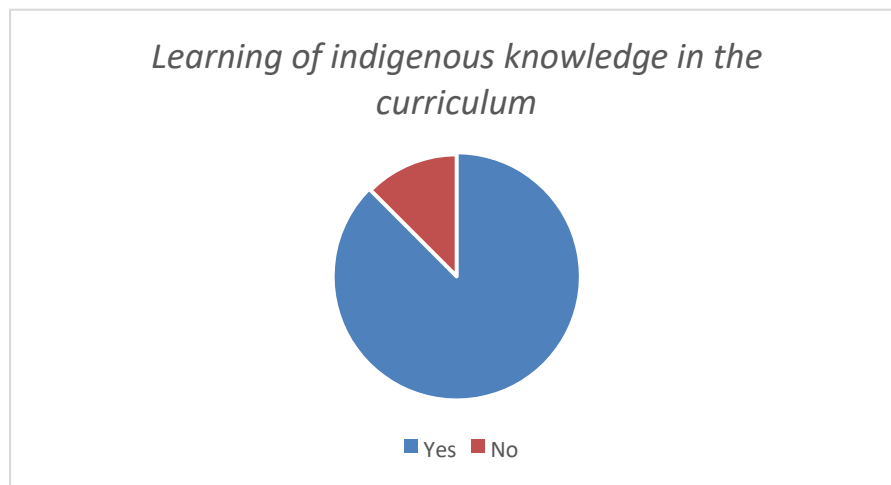


Figure 4-3: Learning of indigenous knowledge in the curriculum

4.3.4 Relation of Indigenous Knowledge in Work integrated learning

Eight students responded to whether they gained any indigenous knowledge during their work integrated learning. About 88% of the student participants shared that had gained some indigenous knowledge, with the remaining 12% expressing the opposite (Figure 4-4). Their responses were not surprising because during work integrated learning, students get exposed to indigenous communities and knowledge. This argument was supported by Beeftink (2011) and Buckley (2019) in chapter 1 that working within indigenous communities, increases levels of knowledge and understanding of a variety of the field, and Emeagwali and Dei (2014) and Robbins *et al.* (2019) when they pointed out that experiential learning opens up different worldviews such as IKS.



Figure 4-4 Indigenous knowledge during work integrated learning

4.3.4.1 Students experience with Indigenous Knowledge in work integrated learning.

The students' responses reflect a rich and diverse set of learnings from their work-integrated experiences, highlighting the depth and breadth of knowledge gained during their engagement with indigenous communities and ecotourism-related fields. An explore diagram has been used to depict the key codes in the responses. Figure 4-5 (explore diagram) was used to capture the myriad of experiences related to indigenous knowledge during WIL.



Figure 4-5: Students work integrated learning with IKS

Figure4-5 highlights experiences such as indigenous communities, indigenous cultures and traditional practices, sustainable tourism practices, hands-on approach, practical approaches, people, biodiversity, and related fields. Content analysis was further used to expound on the responses of the student participants.

S1 emphasizes gaining knowledge and skills related to the history, traditional practices, and social contexts of indigenous communities. The importance of respecting their way of living, seeking consent before engaging with elders, and learning from them is underscored. The student expresses deep appreciation for the resilience of these communities, especially considering the lack of documentation of their knowledge.

S2 focuses on indigenous plants in South Africa and their traditional uses, passed down through generations. The mention of specific plants like Aloe and Impepho, along with their medicinal and cultural significance, showcases the practical knowledge acquired during the work-integrated learning. The student also notes the historical context of plant use, illustrating the continuity of these hands-on practices into modern times.

S3 outlines a comprehensive set of skills and knowledge acquired during their engagement, ranging from sustainable tourism practices to cultural sensitivity and business acumen. This broad spectrum of competencies aligns with the multifaceted nature of ecotourism, emphasizing the importance of diverse skills for a career in the field.

S4 shares insights gained from work integrated learning at Kliprivierberg nature reserve, focusing on historical perspectives. The mention of interactions between the Batwana and Sotho people in the 1850s and the subsequent changes over time provides a glimpse into the historical context of the region.

S5 the importance of engaging local communities in ecotourism practices is emphasized by S5. Acknowledging the practical and indigenous understanding that local communities carry about their natural surroundings, the response highlights the significance of involving them in ecotourism initiatives.

S6 highlights learning centres on how local people maintain and sustain their natural environment, particularly through agriculture. The efficiency of their practical and hands-on practices is noted, highlighting the practical knowledge that contributes to the sustainability of the natural environment.

S7 highlights the learning of different beliefs and practices, emphasizing the importance of this knowledge in better understanding the diversity of people. This aligns with the broader goal of fostering cultural awareness and appreciation.

S8 succinctly lists key categories of learning, including cultural practices, social interactions, languages, and history. This encapsulates a holistic understanding of the interconnected elements that contribute to a comprehensive learning experience.

These diverse perspectives collectively showcase the multifaceted nature of the students' learnings, ranging from cultural sensitivity and historical insights to practical knowledge about indigenous plants and sustainable tourism practices. Key words in figure 4-5 express that there is a vast amount of interconnectedness when it comes to indigenous knowledge and ecotourism and field guiding. The responses reflect a holistic approach to ecotourism education, encompassing not only theoretical concepts but also practical skills and an appreciation for cultural and environmental nuances as supported by Adeyeye (2019) and Vidal (2020) in chapter 1. The learning outcomes of the students' participants show that there is vast information from indigenous

knowledge that is beneficial for their future as field guides or direct line employees in the industry. Students would be better equipped with this information when they venture into the field and beginning the application of the theory of the curriculum (Risiro *et al.*, 2013; Sanga, 2021).

4.3.5 Relevance of Indigenous Knowledge in the Ecotourism curriculum and practice

The question was answered by eight student participants, seven lecturers and eleven field guides and all their responses were quantitative based on yes or no. A cluster chart analysis (Figure 4-6) was used to depict the responses. Savoiu *et al.*, (2023) explained that education should promote a holistic perspective enabling education to be the catalyst of viewing knowledge as whole interconnected entity to comprehend the grander picture. The relevance and importance of indigenous knowledge is emphasized by Paskova and Dowling (2014) Hlengwa (2019) and Kanu *et al.* (2020) in chapter 1 and Bouchard and Gelinas (2014) and Zidny *et al.* (2020) in chapter 2 when stating that there is a need for a balance to be established within western and indigenous education and knowledge. It is noted through these results that all the field guides and lecturers felt that indigenous knowledge was relevant to the ecotourism curriculum and practice. The majority of student participants (88%) also concurred with only 12 percent thinking otherwise. Overall, only one participant seemed not to think that IK was relevant to the ecotourism curriculum and practice.

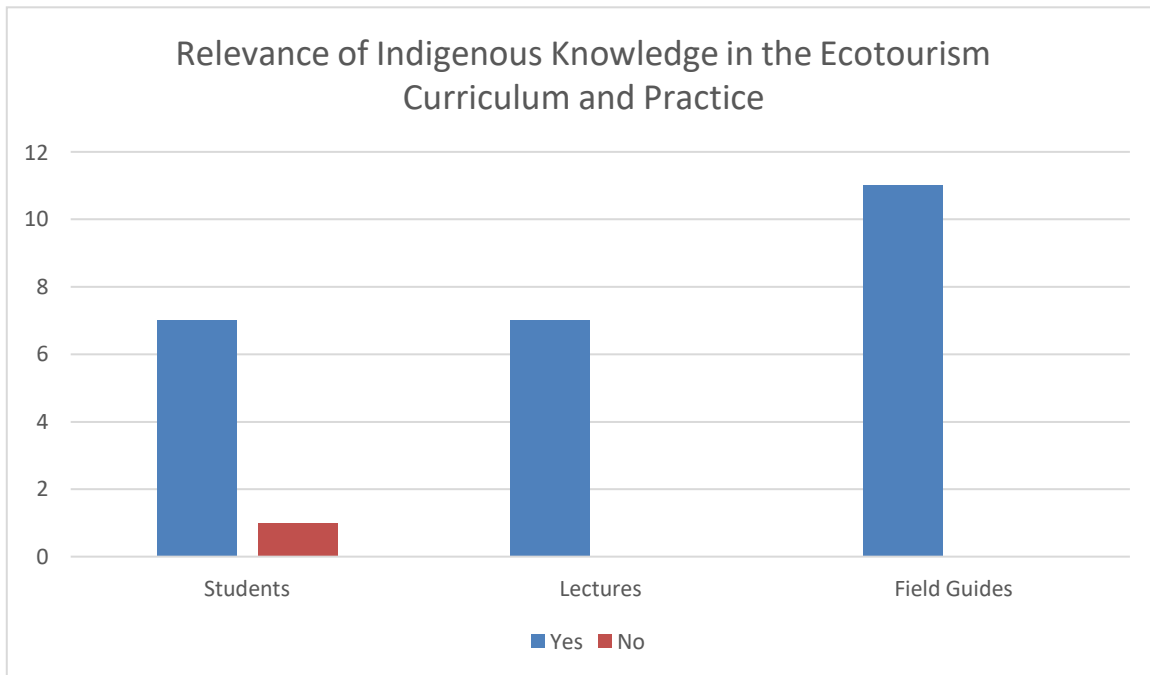


Figure 4-6: Relevance of Indigenous knowledge in the ecotourism curriculum and practice

4.3.5.1 Relevant aspect of indigenous knowledge

All participants further elaborated on the relevance of indigenous knowledge in the ecotourism curriculum and practice. A word cloud analysis (Figure 4-7) was used in this case. This form of visualisation generates the percentage of keywords based on the frequency in the data set (Chawla *et al.* 2023) the sizes of the words depict the number of times it appears.

The collective perspectives from students, lecturers and field guides advocated for the comprehensive integration of indigenous knowledge into ecotourism curricular and practices as IK is seen as pivotal component for promoting cultural sensitivity, conservation, community involvement, and education in the realm of ecotourism (Choi *et al.*, 2020): Paskova & Dowling (2014). The insights from students, lecturers, and field guides collectively advocate for a more comprehensive integration of IK into ecotourism curricular and practices.

The responses from the seven student participants shed light on the crucial need for integrating Indigenous Knowledge into both the curriculum and practice of ecotourism. The diverse rationales provided underscore the multifaceted benefits of this integration.

“Incorporating Indigenous Knowledge into ecotourism curriculum and practice not only benefits the industry, but also respects the rights and contributions of indigenous peoples, promoting a more sustainable and equitable form of tourism.” [S4]

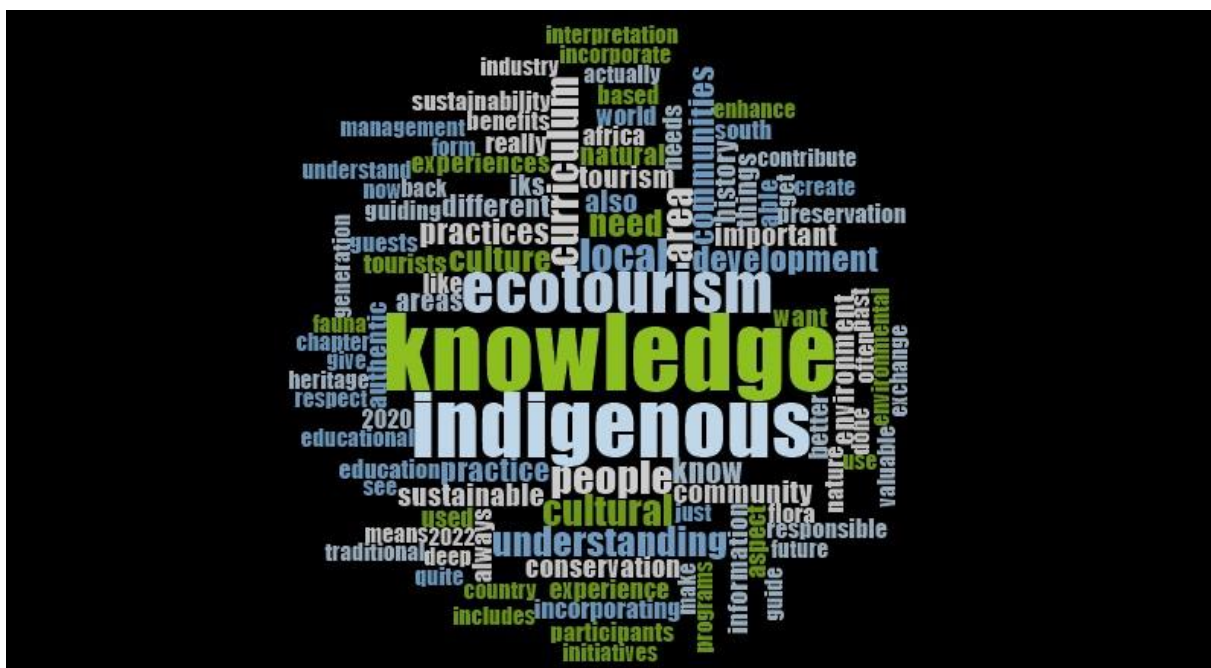


Figure 4-7: Relevant aspects of Indigenous knowledge in the Ecotourism curriculum and practice

Firstly, IK, deeply rooted in cultural traditions and practices, is deemed essential for fostering cultural sensitivity and respect for the varied perspectives of indigenous communities. Secondly, it enhances the authenticity of ecotourism experiences, as community members sharing traditional knowledge provide visitors with a deeper understanding of the local environment and culture. The historical practices of sustainable resource management among indigenous communities form the basis for the third rationale, highlighting how integrating such knowledge can contribute to more sustainable and responsible tourism practices. The involvement of indigenous

communities in ecotourism initiatives ensures the local sharing of tourism benefits, contributing to poverty reduction, community development, and the preservation of cultural heritage. Additionally, IK's inclusion in ecotourism programs contributes to the conservation of biodiversity, aligning with the interconnectedness of nature and culture.

“By far the indigenous people are the best candidates with the absolute knowledge of their indigenous habitats. They have the best explanation for their natural habitats. Because we meet different people from different places so it would help if people understood the different beliefs and practices of other people.” [S6]

Furthermore, IK serves as a rich educational resource, offering valuable content for ecotourism programs that enhance visitors' understanding of the natural and cultural significance of an area. Importantly, integrating IK into ecotourism curricular educates professionals about responsible and ethical practices, contributing to the minimization of negative impacts and the fostering of meaningful partnerships with local communities. The adaptive and context-specific nature of IK allows for the customization of initiatives to suit the unique characteristics and needs of each community and environment. Moreover, the incorporation of IK aligns with global sustainable development goals, particularly those related to cultural preservation, poverty reduction, and environmental sustainability.

In terms of lecturer perspectives, all seven participants unanimously stressed the integral role of indigenous knowledge in ecotourism education. They emphasized that, given the subject's focus on the natural environment and community development, IK is a fundamental component of the curriculum. Lecturers assert that the preservation of authenticity in cultural practices is a paramount consideration, preventing the westernization of local communities and ensuring that tourists experience genuine cultural elements. The integration of IK and ecotourism is seen as a catalyst for cultural exchange, fostering understanding and economic sustainability.

“We cannot separate IKS and the curriculum because it already involves indigenous communities’ programmes, that is where we get authentic information and the traditional ecological knowledge to understand nature

better. Through IKS and ecotourism we are able to explore the cultural exchange opportunities and see economical sustainability exchange.” [L3]

Some lecturers pointed out gaps in the current curricular, specifically in areas like ecotourism biology and wildlife, highlighting the need for more comprehensive coverage of IK. They stressed the importance of maintaining the differentiation of IK within various cultures, acknowledging the diversity across regions and communities.

Field guides’ perspectives further reinforce the importance of IK, and its role in enhancing guiding experiences, preventing the misuse of valuable resources, and preserving cultural heritage. Local knowledge is seen as essential for providing guests with authentic interpretations of an area, creating a better guiding experience. The connection between IK and one's history is highlighted as crucial for understanding past practices and predicting future trends. Incorporating IK into training is viewed as essential for guides to create unique and authentic experiences for tourists, fostering cross-cultural understanding.

“It is an important resource for conservation efforts, as it can be used to inform environmental management practices and support sustainable development. Additionally, incorporating indigenous knowledge into ecotourism can create opportunities for cultural exchange between tourists and local communities, which can foster greater cross-cultural understanding and appreciation.” [F7]

4.3.6 Methods to incorporate Indigenous knowledge into the Ecotourism curriculum and its benefits.

The question was answered by all participants (eight students, seven lectures and eleven field guides) and all their responses were qualitative. Adeyeye (2019) and Kanu *et al.* (2020) in chapter 1 argued that there is a need for a holistic and collaborative approach to integrated and incorporate indigenous knowledge into the curriculum. It is evident that the local communities need to be part of the planning, development and practice of ecotourism and the curriculum. Evidently there is a need for a hands-on approach and a drastic change in perspective in which higher

institutions of learning view IKS and what it holds and brings to the curriculum. The participants further share the need for a module to be put in place that goes in-depth with indigenous knowledge.

A sunburst chart was used to display the results of their responses. According to Clark (2013) and Woodburn *et al.* (2020) sunburst chart is a hierarchy of data presented in a radial form, the root node is the centre and connecting nodes are distributed moving outward in radial angles.

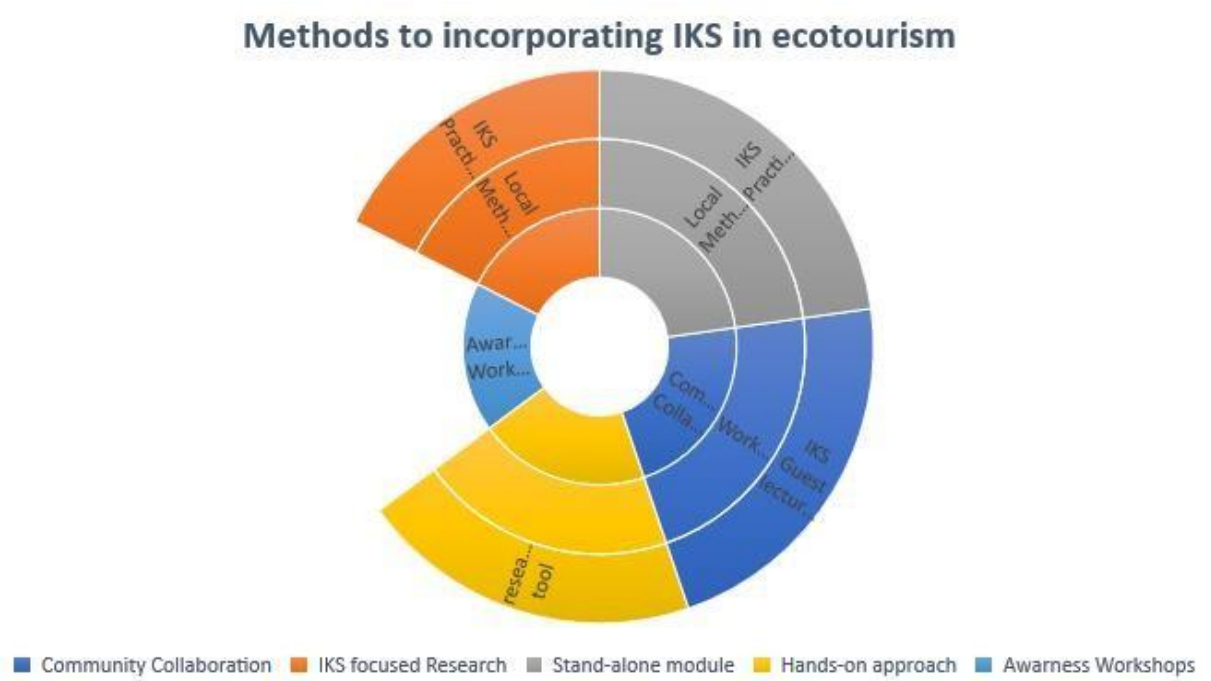


Figure 4-8: Methods to incorporating IKS in ecotourism

In response to the question posed, participants provided valuable insights into the incorporation of indigenous knowledge into ecotourism education. For example, S1 to S8, emphasized various aspects of collaboration, cultural immersion, and practical experiences to enhance the understanding and integration of indigenous knowledge. S1, highlighted the need for collaborative curriculum development with indigenous communities, advocating for the involvement of elders and community leaders in guest lectures and workshops. The importance of hands-on experiences through

field trips and subsequent research papers to capture this knowledge was also emphasized.

Similarly, S2 highlighted the significance of collaboration and partnership with indigenous communities through education and workshops, aiming to raise awareness about indigenous knowledge and integrate traditional ecological practices into ecotourism activities. S5 expanded on these ideas, suggesting methods like guest lectures, community field trips, and cultural immersion to enrich the ecotourism curriculum. The benefits highlighted included cultural enrichment, sustainable practices, biodiversity conservation, and community empowerment.

S3 proposed the addition of a dedicated module focusing on indigenous knowledge to ensure the preservation of natural areas' history and the perpetuation of local communities' ways and traditions. S4 advocated for using traditional stories to teach lessons about the natural world, history, and cultural values, emphasizing increased respect, understanding, and awareness of the relationship between people and their environment. Furthermore, S6 highlighted the importance of providing indigenous candidates opportunities to contribute their raw knowledge in professional writings and incorporating this knowledge into relevant courses such as ecotourism and cultural tourism. In addition, S7 pointed to the practical benefits of traditional farmers' knowledge for agriculture and nature sustainability, including methods for identifying water flow and direction of the land.

There were recurring themes from the seven lecturer participants. These included incorporating indigenous knowledge into existing modules, with some advocating for a standalone module and L1, embedding indigenous knowledge into existing modules and addressing the decolonization of the curriculum, making indigenous knowledge a core element. L2 extended this idea by suggesting collaboration with ecotourism stakeholders, researching the need for indigenous knowledge in services, and using work-integrated learning (WIL) for industry-based information collection. L3 connected ecotourism and cultural tourism, highlighting the role of indigenous knowledge in sustaining nature and conserving heritage sites. L4, on the other hand, argued for a standalone module focused on culture, anthropology, and understanding indigenous cultures in South Africa. L5 shared experiences from a BA in Tourism and Conservation program, emphasizing the interconnectedness of

indigenous knowledge and tourism, also suggesting a dedicated module for better understanding. L6 provided insights into incorporating indigenous knowledge in biology and applied field guiding modules, encouraging students to share their cultural knowledge and facilitating multi-linguistic learning. While L7 stressed the importance of government officials being acquainted with indigenous knowledge, emphasizing its role in environmental conservation and giving cultural communities a voice.

Lastly, the eleven field guides contributed practical perspectives on incorporating indigenous knowledge into ecotourism education. F1 suggested experiential learning through field trips, analysis, and reporting. F2 zoomed into the importance of local community support and suggested uplifting local knowledge through training programs. F3 stressed the significance of teaching local traditions, traditional medicines, and historical stories in field guiding curricular. F4 highlighted the need to capture indigenous knowledge in textbooks, government-funded research programs, and practical guiding. In support, F5 proposed student projects involving visits to rural areas for first-hand experiences. F6 suggested learners writing essays on their areas of guiding expertise, promoting learning through shared indigenous knowledge. Like L2 and S6, F7 recommended involving indigenous community members in the education process and developing training modules covering specific indigenous knowledge topics.

F8 proposed incorporating indigenous knowledge into research projects and presentations, fostering preservation and learning. Gathering information about field guide areas and incorporating indigenous ways of using nature into guiding knowledge would help (F9). Similarly, F10 advocated involving local communities in ecotourism projects, hosting workshops, and supporting the publication of books or journals. According to F11 there was a need for local communities to share knowledge, document it, and incorporate it into field guide training and university education – which highlighted the importance of collaboration.

Responses from all participants collectively underscored the importance of integrating indigenous knowledge into ecotourism education through collaborative efforts, practical experiences, cultural immersion, and a deeper understanding of the environment, history, and traditions of local communities. The multifaceted

approaches proposed by the participants highlight the richness and diversity of indigenous knowledge and its potential to enhance the holistic education of ecotourism students. As stated by Bouchard and Gelinas (2014) and Knopf (2015) in the literature review, indigenous knowledge and western knowledge should not be put in opposition to one another, but they must extend knowledge systems and value in learning from both.

4.4 CONCLUSION

This chapter discussed presented the data collected from all participants, stated the response rate from the preselected population of the study. It further analysed the data through the exploration of various methods to discern the consensus between the participants and to code the themes observed. The researcher then interpreted the responses to further illustrate the responses and from the eight student participants, seven lecture participants and the eleven guide participants. In the next chapter the study research objectives are restated, and then the chapter elaborates on the findings presented and analysed in this chapter.

CHAPTER FIVE

FINDINGS, RECOMMENDATIONS, CONTRIBUTION AND CONCLUSION

5.1 INTRODUCTION

This chapter serves as a comprehensive presentation of the findings derived from the meticulous analysis and interpretation of data conducted in chapter four. The goal is to illustrate the cohesion and correlation between the current findings and the narrative established from chapter one through to chapter four. According to Monash University (2022), the presentation of findings follows established conventions in one's field. Further, the discussion of findings presents an opportunity to develop the story the researcher found in the data, by drawing connections between the results and existing theory and research. The conclusion chapter is about exposing links and drawing conclusions and implications. Bunton (2005) found that the conclusion chapter Summarizes main results, main claims and main recommendations about future work. This chapter follows the advice of Zaid and Tsagem (2022) to restate the aim of the study, reiterate the objective of the study, make a summary of the main findings, discuss the relevance and wrap up.

Thus, this section methodically debunks the research objectives both theoretically and empirically. This approach aims to solidify the findings within the literature reviewed and theory used to buttress the study, particularly emphasising the holistic perspective provided by the Holism theory. In addition to presenting empirical evidence, this chapter provides recommendations delineating how indigenous knowledge can be seamlessly integrated into ecotourism curricular and subsequently applied in post-qualification practice by field guides. The emphasis on practical application seeks to bridge the gap between theoretical understanding and real-world implementation. Furthermore, the chapter delineates the limitations inherent in the methodological choices made by the researcher and how the researcher made up for them. In conclusion, the chapter pinpoints potential avenues for future research, highlighting areas where additional exploration could contribute to a more comprehensive understanding of the subject matter.

5.2 RESTATEMENT OF AIM AND RESEARCH OBJECTIVES

The aim of this study was to identify the place of indigenous knowledge in ecotourism curricular and post-qualification practice among field guides. The study further aimed at highlighting the benefits of including indigenous knowledge in ecotourism curricular, and ways in which this can be implemented to enhance industry practice among field guides. This would be achieved through the research objectives stated in chapter one. The researcher used the objective in order to present the findings. In the section that follows, the researcher presented theoretical finding (based on literature) first, followed by empirical findings (based on primary data)

- To determine the theoretical foundations of indigenous knowledge and ecotourism
- To identify the place of indigenous knowledge in ecotourism curricular and post-qualification practice especially among field guides
- To highlight the benefits of indigenous knowledge in the ecotourism curricular and field guiding post-qualification practice
- To examine the limitations of indigenous knowledge and make recommendations to mitigate them
- To explore different approaches and modules to infuse indigenous knowledge to enhance industry practice among field guides

5.3 FINDINGS ALIGNED WITH RESEARCH OBJECTIVES

The present section is not a review of the literature on indigenous knowledge and ecotourism, but rather an effort to summarise the findings from the data presented and interpreted in chapter four, most of which has come from our existing literature and raw data from participants. The aim was to sift through the data and discover the aligning points with the research objectives. A key element of this section is dissecting the grounds of one's stipulated objectives and stating the correlation between what was analysed and discovered noting any discrepancies and supportive findings for recommendations for future solutions (Mamede & Schmidt, 2023).

5.3.1 The theoretical foundations of indigenous knowledge and ecotourism

5.3.1.1 Theoretic Findings

The concept 'indigenous' involves a location-specific human ethnic culture and knowledge transmitted through generations without migration from its homeland, excluding settler or colonial populations (Knopf, 2015; Stewart, 2018). Indigenous Knowledge Systems (IKS) form a comprehensive framework guiding communication and decision-making across various life aspects, including agriculture, biodiversity, environmental sustainability, resource management, production, and ecosystems (Gope *et al.*, 2017; Adeyeye, 2019; Vidal, 2020). Abah *et al.* (2015) argue that indigenous epistemologies are narratively anchored in complex kinship systems, forming the basis for knowing. Quezada-Sarmiento *et al.* (2018) underscore the involvement of local communities enhances travelers' experiences through interpretation, education, and their local knowledge. In indigenous communities, Noor and Zakaria (2018) and McGregor *et al.* (2023) emphasise the role of diverse knowledge forms that is deeply rooted in the environment and communal cohesion for sustainable resource management, environmental protection, and self-sustainability. Tauro *et al.* (2021); Zidny *et al.* (2020) elaborate on the multidimensional nature of ecotourism, encompassing the interrelationships of biological and cultural diversity, appreciation of place uniqueness, well-being of host communities and visitors, and habitat conservation. Dimitriou (2017); Olearnik and Barwicka (2018) conceptualise ecotourism as a hybrid and assert that ecotourism extends beyond preserving ecosystems to embracing the protection of indigenous communities and their knowledge, which can be destroyed or become inauthentic. The literature is in line with Jardine (2020) theoretical understanding that indigenous knowledge is broad, holistic, place-based, relational and intergenerational, and can take tangible or less tangible forms.

5.3.1.2 Empirical Findings

This conceptualisation of indigenous knowledge and ecotourism amongst the participants is in line with the theoretical and conceptualised literature. The responses shared by participants show a shared consensus that indigenous knowledge is local informal knowledge that is preserved within that ethnic community and passed on orally

from one generation to another in that native area. They note that it is communal values and skills developed through life-long interaction with their natural environment. Indigenous knowledge is viewed as knowledge that hold experience for sustainability methods and holistic in its nature and operation. Responses from all participants seemed to concur that ecotourism is a form of responsible and sustainable travel with the intent of preservation, conservation, and education about the importance of the local flora and fauna, whilst fostering socio-economic development and community engagement. There is a deep resonance of ecotourism working in conjunction with the local community, which in most cases are indigenous communities, for the economic betterment and also knowledge transfer during interpretation of heritage or sacred sites.

5.3.2 The place of indigenous knowledge and ecotourism curriculum and post-qualification practice in field guides

5.3.2.1 Theoretic Findings

The program descriptions at DUT (2022) and VUT (2022) underscore the vital role of ecotourism in making positive contributions to natural environmental resources, socio-cultural environments, and the economic well-being of destinations and local communities. Post-qualification practices, as highlighted by Calix (2015), involve roles such as ecotourism development specialists, tourism and human resources advisors, nature tourism rangers, and responsible tourism communications managers, all emphasising the importance of community involvement. Ecotourism, therefore, emerges as a strategy to safeguard endangered cultural traditions and roots, preventing the erosion of authentic environmental and cultural knowledge sought by ecotourists (Whelan, 2013; Hlengwa, 2019; Suacana *et al.*, 2023). Suacana *et al.* (2023) further highlighting the growing trend for environmentally sensitive tourism and a desire for tourists to engage with indigenous communities. Indigenous knowledge, which is essential in ecotourism field guiding, is often overlooked in traditional educational settings (Dimitriou, 2017; Hlengwa 2019: 4). Field guides play crucial roles, including leading, educating, representing, hosting, and interpreting the surroundings (Dimitriou, 2017). Interpretation in ecotourism involves various methods such as talks,

walks, storytelling, living history, and demonstrations, drawing from early indigenous practices (Buesgens, 2013; Gelinas & Bouchard, 2014).

5.3.2.2 Empirical Findings

The findings reveal that almost all the participants recognize the importance and connection of indigenous knowledge in both the ecotourism curriculum and practical applications. Authentic ecotourism education inherently incorporates a significant element of indigenous knowledge, as our curriculum heavily relies on understanding the natural environment, encompassing flora and fauna, as well as community development. Indigenous communities possess extensive information and adhere to a holistic lifestyle with nature and their surroundings. While this knowledge may not always be scientifically proven, it remains crucial for the sustainability of ecotourism itself, acting as a catalyst supporting the fundamental principles of ecotourism. This indigenous knowledge is akin to an essential element that contributes to the pillars of ecotourism, and its infusion into the study of ecotourism and post-qualification practice is both scientifically valuable and worth considering.

The results indicate a prominent role for Indigenous Knowledge Systems in contributing to economic growth in the industry, increased community involvement, as well as enhancing tourist satisfaction through authentic experiences and storytelling. Moreover, the advancement of non-harmful conservation techniques showcases the limitless potential of integrating indigenous knowledge into the ecotourism curriculum and post-qualification practices. Ecotourism and indigenous knowledge can be seamlessly woven together in practice. The core principles of ecotourism: sustainability, preservation, and conservation; community involvement and development; and education and interpretation can be further enriched with a thorough understanding and practical application of indigenous knowledge.

5.3.3 The benefits of indigenous knowledge in the ecotourism curriculum and post-qualification practice in field guides

5.3.3.1 Theoretic Findings

Incorporating Indigenous Knowledge Systems into the school curriculum, noted by Risiro *et al.* (2013), is crucial for resource conservation. Joppe (2010) emphasise the need for understanding indigenous perspectives in tourism education for sustainable development strategies. Risiro *et al.* (2013) suggest combining modern and traditional methods for sustainable biodiversity conservation. Su *et al.* (2020) highlights the utility of indigenous knowledge in wildlife conservation. Mekonen (2017) emphasises the potential of IK in providing insights for various aspects of environmental management and environmental assessments [EA] (Jardine 2020). Syahrial *et al.* (2021) emphasise that IK content in study materials supports regional and national development. (Abdi, 2012). The application of IK is highlighted by Ehlers-Smith (2021) in understanding ecology and the historical distribution of endangered species. Emeagwali and Dei (2014); Razzaq *et al.* (2023) advocate for the decolonisation and indigenisation of the African academy and curriculum for meaningful developmental problem-solving engagements. Madlela (2022) accentuates that IKS is more relatable to students and learner-centred as it aligns with the background they emerge from.

Indigenous knowledge (IK) integrated into ecotourism, supported by scholars like Francis *et al.* (2019), Lackey *et al.* (2019) and Prasetyo (2019), involves local communities in conservation, preserving culture and ecological wisdom (Coria & Calfucura, 2012; Conservation Careers, 2021; McGregor *et al.*, 2023). Paskova and Dowling (2014) recognise local people's vital contribution through their indigenous knowledge in ecotourism (Turner *et al.*, 2022). Magni (2017) highlights that indigenous peoples' holistic worldviews contribute to biodiversity, ecological balance, and a healthy environment through their indigenous sustainable practices. Beeftink (2011) highlights that combining IK with ecotourism guides educates tourists about different cultures, environmental ethics, and values related to indigenous communities. Thompson *et al.* (2021) suggest that working within indigenous communities boosts confidence, knowledge, and understanding for both communities and guides. Beeftink (2011) notes that guides cover various topics during tours, enhancing tourists' understanding of local plants, animals, community history, indigenous culture, weather

patterns and other natural phenomena as how the Simeuluens in Sumatra, Indonesia use IK of their place to survive the 2004 deadly Tsunami (Shaw *et al.* 2008). Cultural sensitivity is crucial for field guiding in aligning tourism with the local people and expectations (Mistry *et al.*, 2016; Mondino & Beery, 2019; Viken *et al.*, 2021).

5.3.3.2 Empirical Findings

Incorporating indigenous knowledge into ecotourism not only enhances the visitor experience, but also brings economic empowerment to indigenous communities, preserves their cultural heritage, and supports environmental conservation. The knowledge ensures that the history of natural areas is known and preserved, serving as a means for local communities to maintain their identity, traditions, and ways of life. Visitors benefit by learning and respecting the cultures of the areas they visit, fostering increased understanding of other cultures and intercultural relations. The incorporation of indigenous knowledge leads to a more holistic approach to exploring social and environmental problems, raising awareness of the intricate relationship between people and their environment. Field guides highlighted that as local guides they are able to inform tourists about things that they might not have known about that area such as the animals, trees, and culture using references of local information and it has proven to be beneficial. They expressed that they are able to teach and interpret better when using IKS and educate tourists about what happens in the area that they've been staying in and working in for a long time. It is evident that indigenous knowledge plays a pivotal role in ecotourism development and in ecotourism practice, there is a common understanding within the participants that indigenous knowledge and ecotourism are interlinked and enhances tourist experience.

The benefits encompass cultural enrichment, sustainable practices, biodiversity conservation, community empowerment, ethical tourism, and holistic learning. This approach promotes a responsible and well-rounded perspective in ecotourism education. Increased involvement of locals in ecotourism systems contributes to enhanced knowledge for students and benefits agriculture and nature sustainability. Additionally, there is an opportunity to learn from traditional medicine practices and beliefs about plants and animals, potentially offering insights for treating and preventing illnesses. Overall, the integration of indigenous knowledge into ecotourism

brings about multifaceted advantages for communities, visitors, and the sustainable development of natural areas.

5.3.4 Approaches and modules to infuse indigenous knowledge to enhance industry practice in field guides

5.3.4.1 Theoretic Findings

The theoretical findings highlight the crucial role of higher education and the intelligentsia in shaping a culturally relevant curriculum (Mutekwe, 2015; Fataar, 2018). Ecotourism is recognised as a catalyst for promoting IK in training and industry practice, emphasising integrated holistic planning and polycentric governance for connectivity (Choi *et al.*, 2021). Adeyeye (2019) and Ng'asike (2019) advocate for the development of theories and models to integrate African indigenous knowledge into global development agendas. Madlela (2022) highlights that the important ingredient to the radical development, advancement and transformation of the curriculum is indigenous knowledge. The integration of indigenous and Western knowledge systems is promoted to avoid marginalisation of cultural heritage (Odora-Hoppers, 2002; Mutekwe, 2015). Indigenous communities should be given the opportunity to be part of research and bridging the gap in a manner that adheres to their values (McGregor *et al.*, 2023). Savoiu *et al.* (2023) vouch that a holistic approach in academic research aids in solving matters based on multi-, inter- and transdisciplinary approaches.

A holistic approach, combining traditional knowledge sharing with modern technology, is proposed to incorporate African Indigenous Knowledge Systems (AIKS) into educational curricula (Adeyeye, 2019; Hlengwa, 2019; Mutekwe, 2015). Ringo (2019) and Razzaq *et al.* (2023) emphasises considering indigenous knowledge in tourism development and academia, and Walter and Guerzoni (2020) supports the indigenization of education across subjects. Joppe (2010) and Fataar (2018) caution that non-indigenous faculties might be resistant to curriculum shifts, while Velempini *et al.* (2017) advocate engagement beyond textbooks for place-based knowledge. Interpretation, as suggested by Carr *et al.* (2016), is a powerful tool for conveying indigenous values and knowledge.

Experiential learning, involving practical demonstrations, storytelling, and songs, is considered vital for preserving IK (Magni, 2017; Robbins *et al.*, 2019; Emeagwali & Dei, 2014). IK, spanning various disciplines, is highlighted in sectors like medicine, agronomy, and biology (Emeagwali & Dei, 2014; Magni, 2017). Hlengwa (2019) and Travesi (2017) stress the importance of including IK and its epistemologies to address developmental discourses in ecotourism. Collaboration between teachers and IK holders is suggested for understanding and locating IK and cultural practices (Carson *et al.*, 2018; Roberts *et al.*, 2014; Velempini *et al.*, 2017). Barkakas and Gladwin (2021) propose educational talking circles with indigenous and non-indigenous facilitators for supported and relational learning environments. In the same spirit, Tauro *et al.* (2021) emphasize genuineness in ecotourism education to embrace diverse human worldviews and understand the biologically diverse organisms in ecotourism locations. Additional training for field guides is recommended to enhance mindfulness and insight (Dimitriou, 2017). Walter (2010) emphasises incorporating IK into ecotourism curriculum development through traditional guidance and interpretation by field guides, and (Zidny *et al.*, 2020) recognising the multiculturalism of IK and encouraging collaborative solutions between indigenous and Western worldviews in education.

5.3.4.2 Empirical Findings

The approaches discovered depict a shared narrative, that there is a need for a module to be in place that focuses on educating about indigenous knowledge and their social pillar. Deeper understanding between the link of ecotourism and indigenous knowledge needs to be in the forefront of the curriculum. Local communities and IKS holders or custodians need to be granted space in academia to enable them to publish their knowledge for academic use, to be part of academic curriculum developments and to be involved in operations that take place within their vicinity.

The consensus shared between the participants is the need for a holistic and collaborative approach to be integrated and to incorporate indigenous knowledge into the curriculum. It is evident that the local communities need to be part of the planning, development and practice of ecotourism and the curriculum. Evidently there is a need for a hands-on approach and a drastic change in perspective in which higher institutions of learning view IKS and its value important enough to infuse into the curriculum. The participants further shared the need for a module to be put in place

that goes in-depth with indigenous knowledge in which different presenters will be allowed to enrich the curriculum with various aspects of IK.

5.3.5 Limitations of indigenous knowledge

5.3.5.1 Theoretic Findings

The integration of IKS into formal Western education poses a significant challenge, emphasising the historical lag in African scholars' global contributions to educational institutions and curricular innovations (Kanu *et al.*, 2020; Mutekwe, 2015; Jean-François, 2018; Adeyeye, 2019; McGregor *et al.*, 2023). Traditional Western education often overlooks the importance of indigenous cultures and environmental contributions, resulting in a lack of relevance for students from aboriginal backgrounds (Kanu *et al.*, 2020; Aswani *et al.*, 2018; Risiro *et al.*, Tshuma & Basikiti, 2013; Sanga, 2021; Senanayake, 2006).

The absence of local communities and indigenous peoples in international environmental policies is a significant limitation, driven by scepticism about engaging with the tourism industry due to concerns about exploitation, cultural misappropriation, and misalignment with indigenous values (The Autonomous University of Barcelona, 2019; Scheyvens *et al.*, 2021). Ethical considerations in biodiversity and cultural diversity research, as highlighted by Higgs (2011) and Tauro *et al.* (2021), further contribute to the limitations. Controversies arise over the inclusion of IK, indigenous control in scientific knowledge, qualifications of community experts without scientific training, and the codification of IK (Haverkort & Reijntjes, 2010; Roberts *et al.*, 2014; Gelinas & Bouchard, 2014; Battiste, 2005; Bruchac, 2014).

Concerns are raised about the global loss of indigenous knowledge systems critical for understanding environmental patterns (Ishii, 2014; Razzaq *et al.*, 2023). Higher education in Africa is criticised for being distant from community concerns, producing graduates lacking development skills for local communities (Kaya & Seleti, 2013). The oral nature of IK poses a hindrance to its development into theoretical knowledge, with its essence remaining active in people's culture rather than in archives, libraries or laboratories (Senanayake, 2003; Botha, 2010; Austin & Hickey, 2011; Turner *et al.*,

2022). Su *et al.* (2020) further emphasise that IK is no longer being passed on to younger generations as communities modernise.

5.3.5.2 Empirical Findings

The conceptualisation of the limitations begins with the recognition that the current curriculum predominantly centres around Western knowledge, necessitating a fundamental shift to embed indigenous knowledge into the core of the modules. This calls for a comprehensive effort to decolonise the curriculum, repositioning indigenous knowledge as the focal point with Western knowledge playing a supportive role at the periphery. Another crucial consideration is the diverse background of ecotourism students, particularly African students from historically disadvantaged schools, often instructed in their mother tongue. Addressing this limitation involves implementing multi-linguistic teaching approaches within universities to ensure an inclusive and non-alienating academic experience for these students, especially during writing and presentations. The third limitation pertains to the lack of comprehensive documentation of IKS, necessitating extensive research to identify and incorporate relevant elements into the curriculum for educational purposes within the context of ecotourism and field guiding.

The final limitation stresses the gradual loss of indigenous knowledge within communities as elders pass away. The current generation's lack of ownership and pride in their heritage contributes to the diminishing repository of information. To address this, efforts should focus on fostering a sense of cultural pride and heritage appreciation within the community, encouraging the younger generation to take active ownership of and preserve indigenous knowledge. Overall, the conceptualisation emphasises the need for a transformative approach to curriculum design, linguistic inclusivity, research, and community engagement to overcome these limitations and promote the integration of indigenous knowledge in ecotourism education.

5.4 RECOMMENDATIONS

In the realm of research and curriculum development, it is imperative to conduct thorough investigations into indigenous knowledge systems and engage with

communities still authentically practicing them. To address the marginalization of cultures and languages, a collaborative roundtable involving curriculum developers, educators, and indigenous knowledge custodians should be established. This platform will facilitate the open sharing of key cultural teachings, values, and ethical behaviour within these communities, fostering trust with service providers operating in the area. This collaboration is essential for the development of an inclusive and holistic curriculum. Concerning the integration of IK in academia, the Department of Higher Education, universities, and ecotourism stakeholders must enhance their understanding of IKS through research and consultation. A strategic approach should be developed to embed indigenous knowledge into academia, preparing students for engagement with communities. This preparation should include imparting knowledge about unspoken codes of conduct, community needs, and shared values. Not only does this prevent inadvertent cultural insensitivity, but it also equips students and field guides to educate tourists about the significance of sacred places, animals, and rituals. To further support the incorporation of indigenous knowledge, there should be encouragement for the creation of more literature on IKS and various cultures. Lecturers with PhD qualifications can contribute short articles focused on specific indigenous communities, enriching available academic resources.

For community involvement and awareness, universities should actively engage local communities through workshops or IKS awareness campaigns targeted at students. Local indigenous knowledge holders can be invited to conduct workshops or presentations for students, providing specialized information on topics such as astronomy, wildlife, local environmental disruptions, culture and ecotourism practices. This first-hand experience will enhance students' understanding of specific topics related to their modules and assist lecturers in better incorporating indigenous knowledge into their teaching. During work-integrated learning experiences, students should be assigned tasks to collect relevant data about the local indigenous communities in which they are undergoing training. This practical exposure contributes to a more comprehensive understanding of indigenous knowledge and its application. To ensure the preservation and dissemination of indigenous knowledge within educational settings, funding should be provided to indigenous communities for the documentation of their knowledge in a format suitable for classrooms.

Continuous training programs for field guides should be implemented to deepen their understanding of indigenous knowledge, conservation practices, and preservation systems specific to the areas in which they operate. This ongoing education is crucial for ensuring responsible and informed guidance for tourists. Aligning these efforts with sustainable tourism initiatives is essential. Capitalizing on initiatives by tour operators focused on sustainable and eco-friendly travel, there should be partnerships with indigenous communities. Additionally, university education should be aligned with field experiences to reflect current industry practices. This holistic approach ensures a harmonious blend of academic knowledge and practical experience, contributing to sustainable tourism practices.

5.5 CONTRIBUTION OF THE STUDY: ECOTOURISM-IKS-HOLISM MODEL

The study introduces a practical strategy for collecting indigenous knowledge, suggesting the use of students during their work integrated learning. This approach not only provides students with valuable hands-on experience, but also serves as a means to actively involve them in the documentation of indigenous knowledge. By incorporating students into the data collection process, the study promotes a dynamic and participatory approach to gathering information, fostering a sense of responsibility and engagement among the learners. The research identifies and develops additional areas for embedding indigenous knowledge within the ecotourism curriculum. This expansion goes beyond traditional approaches, suggesting that the incorporation of IKS can take place in various aspects of the educational framework. The study proposes innovative methods, such as students presenting on topics related to ecotourism and link them to indigenous knowledge. This approach not only enriches the learning experience, but also reinforces the integration of diverse cultural perspectives into the educational content. It encourages students to actively explore and connect their coursework to the valuable insights offered by indigenous knowledge systems. Figure 5-1 introduces as contribution of the study the ecotourism-IKS-holism model adapted from Vizina (2008). The model illustrates how teaching and learning cannot be complete without addressing all the dimensions of self namely: physical (action, dialogue, collaboration and building relationships); mental (development, research and reflection); emotional (ethical practices, balanced approaches and epistemologies, positive energy of a confident lecturer and field guide); and spiritual

(realization of the interconnectedness of everything, acceptance of diverse world views, respect of the unknown, and integration into a holistic being), and how a tourists' experience would be incomplete if any of their dimensions are ignored.

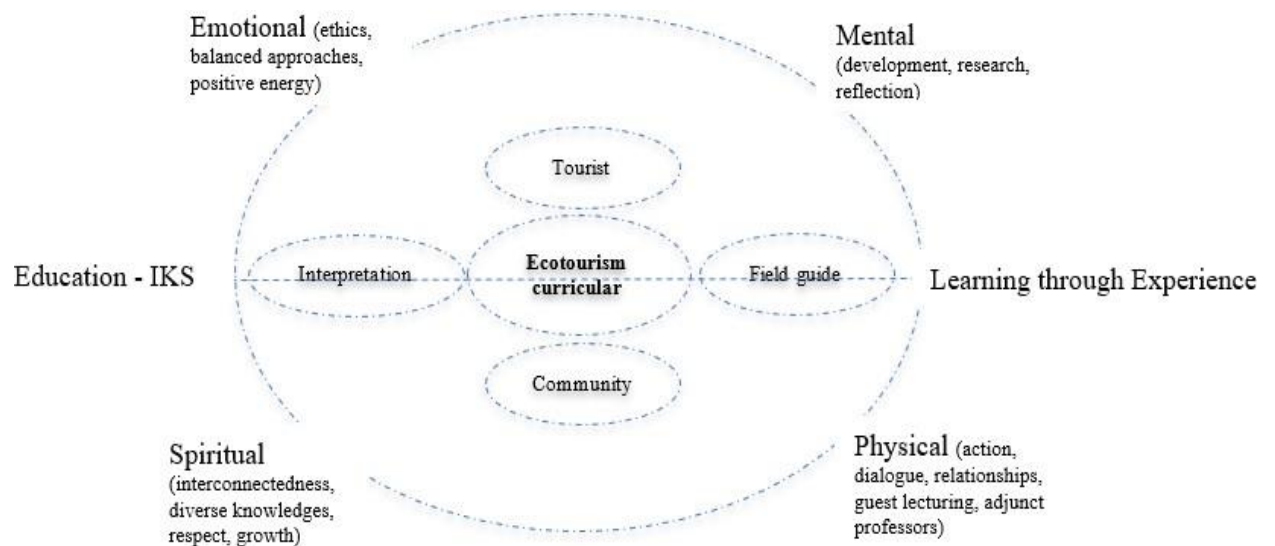


Figure 5-1: Ecotourism-IKS-holism model
Adapted from Vizina (2008)

These contributions reflect a proactive and solution-oriented approach to addressing the gaps identified in current ecotourism curricular and systems. By proposing practical strategies and broadening the scope of IKS integration, collaborating with the custodians of IKS (especially the National Indigenous Knowledge Systems Office), issues and challenges identified by Abah *et al.* (2015); Adeyeye (2019); Aswani *et al.* (2018); Jean-Francois (2018); Madlela (2022); (McGregor *et al.*, 2023) and Simmie (2023) in chapters one and two would be addressed by laying the foundation for a more holistic, locally and culturally sensitive ecotourism curriculum.

5.6 LIMITATIONS OF THE STUDY

The study encountered time constraints as a challenge. The acquisition of ethical clearance for data collection consumed a considerable amount of time, however, the researcher utilized this gap to conduct an extensive literature review, focusing on

recent literature related to the investigated problem. Additionally, there were difficulties in securing the desired number of field guide participants, prompting the researcher to employ alternative communication methods to gather responses. Despite evident hesitancy among students to participate, resulting in a low response rate, the researcher persevered by sending follow-up requests and maintaining communication with those in contact. Notably, the researcher was careful not to persuade or convince but opted for a gentle reminder in their communication approach.

5.7 CONCLUSION

The aim of this study was to identify the place of indigenous knowledge in ecotourism curricular and post-qualification practice among field guides. The study further aimed at highlighting the benefits of including indigenous knowledge in ecotourism curricular, and ways in which this can be implemented to enhance industry practice among field guides. The study explored the limitations in merging indigenous knowledge systems (IKS) with the existing curriculum. In this chapter, findings in alignment to the objectives were presented with the support of existing literature and the 'Holism' theoretical framework that anchored this study. Lastly, the researcher shared the recommendation to mitigate the limitations and approaches to infuse IKS into the curriculum.

5.8 AREAS FOR FURTHER RESEARCH

The researcher expresses a keen interest in advancing the study from a fresh perspective, focusing on exploring the specific contributions of Indigenous Knowledge Systems within distinct modules, namely ecotourism biology and ecotourism wildlife. This future research aims to unravel the nuanced ways in which IKS teachings can enhance these specialised subjects.

Additionally, the researcher proposes a secondary study focused on assessing the preparedness of tourism students for the field guiding sector. The aim is to address the subliminal misalignment observed between classroom teachings and the operational realities of the industry, particularly in relation to indigenous knowledge. This

investigation seeks to identify and bridge these gaps, ensuring students are well-equipped for the dynamic practical environment of the sector.

The third proposed study investigates the repercussions of inadequate maintenance of heritage sites on tourist visitation and satisfaction levels. Sparked by the researcher's travel experiences across southern Africa, where heritage sites are crucial for preserving indigenous history, this study aims to uncover how poor maintenance practices affect the overall tourism experience. The research seeks to provide valuable insights for the preservation and management of cultural heritage sites.

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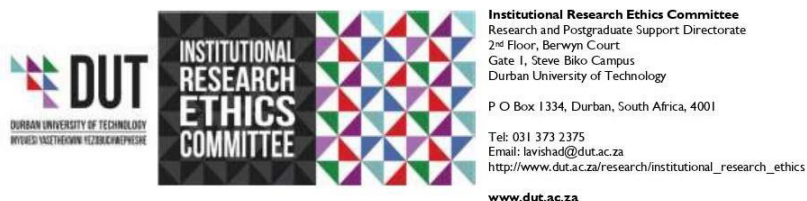
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Annexure A: DUT Ethical Clearance



7 March 2023

Ms A Z Khumalo
P.O. Box 8022
Esikhawini
3887

Dear Ms Khumalo

Indigenous knowledge in the ecotourism curriculum at selected universities of technology and implications for post-qualification practice by field guides
Ethical Clearance number IREC 153/22

The DUT-Institutional Research Ethics Committee acknowledges receipt of your gatekeeper permission letter.

Please note that FULL APPROVAL is granted to your research proposal. You may proceed with data collection.

Any adverse events [serious or minor] which occur in connection with this study and/or which may alter its ethical consideration must be reported to the DUT-IREC according to the DUT-IREC Standard Operating Procedures (SOP's).

Please note that any deviations from the approved proposal require the approval of the DUT-IREC as outlined in the DUT-IREC SOP's.

It is compulsory for a student or researcher to apply for recertification on an annual basis. The failure to do so will result in withdrawal of ethics clearance. It is the responsibility of the researcher and the supervisor to apply for recertification.

Please note that you are required to submit a Notification of Completion of Study form together with an abstract to the DUT-IREC office on completion of your study.

Yours Sincerely

Prof J K Adam
Chairperson: DUT-IREC

Annexure B: Letter of Information



LETTER OF INFORMATION

Title of the Research Study: Indigenous knowledge in the ecotourism curriculum at selected universities of technology and implications for post-qualification practice by field guides.

Principal Investigator/s/researcher: Amanda Zamantungwa Khumalo, Bachelors of Technology in Tourism Management

Co-Investigator/s/supervisor/s: Prof D.C. Hlengwa, D. Business Administration

Brief Introduction and Purpose of the Study: This study seeks to find the place for indigenous knowledge in the Ecotourism curriculum and post-qualification practice at the Durban University of Technology (DUT) in the Midlands campus and at Vaal University of Technology in Vanderbijlpark. The study intends to highlight the benefits of integrating indigenous knowledge in the curriculum through accentuating the importance of multiple perspectives and worldviews. The study will also explore the limitations in merging Indigenous knowledge system with the existing curriculum. Walter and Guerzoni (2020 para.5) highlight that indigenising education means that every subject at every level is examined to consider how and to what extent current content and pedagogy reflect the presence of Indigenous peoples and the valid contribution of Indigenous knowledge.

Warm Greetings.

I trust this letter finds you well.

I am a Masters student at Durban University of Technology doing research for my Masters of Management Sciences in Hospitality-Eco/Env (MMECM1). I am kindly requesting your participation in a research study that I am conducting titled: Indigenous knowledge in the ecotourism curriculum at selected universities of technology and implications for post-qualification practice by field guides.

Research is defined as the creation of new knowledge and/or the use of existing knowledge in a new and creative way so as to generate new concepts, methodologies and understandings. This could include synthesis and analysis of previous research to the extent that it leads to new and creative outcomes (Western Sydney University, 2020).

The intention is to uncover your perspective and understanding of Indigenous knowledge in the Ecotourism curriculum and post-qualification practice. The study involves you answering a set of semi-structured in-depth questions and sharing your views. Your participation is completely voluntary and you may withdraw from the study at any time. The study is completely anonymous; therefore, it does not require your name or any other identifying information that may reveal your identity. Should you have any issues with understanding any of the questions or words used,

please feel free to ask for clarification prior to, during or post our session together. You are entitled to discuss the study with your family and friends for advice and opinions about the study.

If you would like to participate in the study and assist it in reaching a conclusion, please read the Consent letter below. If you need any further clarification, please feel free to ask.

Outline of the Procedures: The aim of this study is to identify the place of Indigenous knowledge in the Ecotourism curriculum and post-qualification practice using the Durban University of Technology and Vaal University of Technology as cases. The use of the two universities as cases in this study is not to compare them, instead, to seek to explain the similarities of the cases. This will then allow the study to analyse how each university can best integrate Indigenous knowledge into its curriculum and explore perspectives towards this proposed phenomenon with intentions to uncover the best suitable approach for the integration into the curriculum. This study seeks to highlight the benefits of including Indigenous knowledge in the curriculum and ways in which this can be implemented to enhance industry practice.

You have been chosen to participate in this study because you possess potential knowledge and expertise that will be very valuable to assisting this study reach its conclusion. The purpose of this interview is to have an in-depth semi-structured interview session about the place for indigenous knowledge in the ecotourism curriculum and post-qualification practice using the Durban University of Technology and the Vaal University of Technology as cases. The interview questions have been attached to grant you time to prepare yourself for the interview and to give you an opportunity to ask for clarity where you do not understand. During the interview, I will ask the same questions attached and you will be given a chance to contribute as much information as possible to the study. The interview will be a one-on-one interview and will be held via audio call and held at a time that is convenient for you. The interview will take an estimated time of 5-10 minutes. The audio call will be recorded for data analysis purposes (processing and transcribing the information received) but your identity will be kept anonymous throughout the study. Only the information received will be used in a manner that does not reveal your identity. I have no anticipated follow-up interviews; however, a copy of the final dissertation will be emailed to you as a PDF copy.

Risks or Discomforts to the Participant: No risks or any form of discomfort are foreseen.

Explain to the participant the reasons he/she may be withdrawn from the Study: Should you have a change of heart and wish to withdraw from the study, you may do so at any time. There will be no penalty to you should you wish to discontinue the interview.

Benefits: Publication of the study.

Remuneration: None.

Costs of the Study: None.

Confidentiality: I will need signed consent from you before conducting the data collection (the interview session). Your personal information will not be presented in the study to ensure that you remain anonymous. There won't be any follow-up calls or coding that may expose your identity. All data will be anonymised and stored at a location where only I will know. All data collected will be stored for a maximum of 5 years, should I consider embarking on another research study related

to the topic at hand. Should these not be needed the written data will be shredded and the encrypted data destroyed.

Results: The data collected from the interviews and questionnaires will be assessed for repetitions and keywords. Afterwards, the data will be presented as a network display with reflective memos. The final copy of the study with the results and conclusion will be sent via email as a PDF copy.

Research-related Injury: None anticipated

Storage of all electronic and hard copies including tape recordings: All data will be anonymised and stored at a location where only I will know. All data collected will be stored for a maximum of 5 years, should I consider embarking on another research study related to the topic at hand. Should these not be needed the written data will be shredded and the encrypted data destroyed.

Persons to contact in the Event of Any Problems or Queries: If you require any further information, please do not hesitate to me on 0784847283 or amandakhumalo609@gmail.com or My supervisor details: Prof D.C. Hlengwa on 0338458858 or dumisileh@dut.ac.za. Or the Institutional Research Ethics Administrator on 031 373 2375. Complaints can be reported to the Research and Postgraduate Support on 031 373 2577 or researchdirector@dut.ac.za.

Annexure C: DUT Gatekeeper



*Directorate for Research and Postgraduate Support
Durban University of Technology
Open House
P.O. Box 1334, Durban 4000
Tel.: 031-3732576/7
Fax: 031-3732946*

1 March 2023

Ms Amanda Khumalo
c/o Department of Ecotourism
Faculty of Management Sciences
Durban University of Technology

Dear Ms Khumalo

PERMISSION TO CONDUCT RESEARCH AT THE DUT

Your email correspondence in respect of the above refers. I am pleased to inform you that the Institutional Research and Innovation Committee (IRIC) has granted **Gatekeeper Permission** for you to conduct your research "Indigenous knowledge in the ecotourism curriculum at selected universities of technology and implications for post-qualification practice by field guides." at the Durban University of Technology. **Kindly note that this letter must be issued to the IREC for approval before you commence data collection.**

The DUT may impose any other condition it deems appropriate in the circumstances having regard to nature and extent of access to and use of information requested.

Upon completion of your research project, you are requested to share the summary of your key research findings.

Kind regards.
Yours sincerely

DR V. GOVENDER
ACTING-DIRECTOR: RESEARCH AND POSTGRADUATE SUPPORT DIRECTORATE

Annexure D: VUT Gate Keepers Letter



VAAAL UNIVERSITY
OF TECHNOLOGY

**Research Directorate
Central Research Ethics Committee**

Vanderbijlpark Campus
• Andries Potgieter Blvd
Vanderbijlpark, 1900, South Africa
• Private Bag X021
Vanderbijlpark, 1911, South Africa
www.vut.ac.za

• +27(0)16 950 7773
• +27(0)16 950 9779
• deborahn@vut.ac.za

LETTER FROM THE CENTRAL RESEARCH ETHICS COMMITTEE

Private Bag X021
Vanderbijlpark
1900

27 July 2023

**DECISION:
FINAL APPROVAL**

**CREC REFERENCE NUMBER –
No 27-07-2023-5.1 (DUT)**

Dear Ms Khumalo,

PROJECT TITLE: *Indigenous knowledge in the ecotourism curriculum at selected universities of technology and implications for post-qualification practice by field guides.*

RESEARCHER/PRINCIPLE INVESTIGATOR: Ms AZ Khumalo

SUPERVISOR/S & PROMOTER/S: Prof D Hlengwa

APPLYING INSTITUTION: Durban University of Technology

FACULTY: Management Sciences

DEPARTMENT: Ecotourism Management Sciences

QUALIFICATION: MMECM1 M Management Sciences (Hosp-Eco/Env)

Thank you for submitting the above-mentioned project for research ethical approval. Your application was discussed in the Central Research Ethics Committee Meeting held on the 27th July 2023, and, was granted final approval.

The terms and conditions presented in the box below are binding:

As the primary researcher you undertake:

- 1. To follow only those procedures for which the approval has been given;*
- 2. To inform the committee should there be significant deviations from that which has been approved;*
- 3. To report any Serious Adverse Events that might occur, within 14 days of the event (following the Guidelines procedure);*
- 4. That it is noted that this ethics clearance lapses on 31st December 2025, after which you will need to apply again;*
- 5. To inform the committee on the completion of the project, when the findings have entered the public domain;*
- 6. In all correspondence to use the CREC Reference Number, above;*
- 7. Please take note that a progress report needs to be submitted every six months, in the months of June and November from the approval date;*
- 8. Should the project extend beyond the 3 years, the normal resubmission procedure will commence, or a special application for extension for a short period not more than 3 to 6 months, provided that the progress reports were received.*

We wish you well with your future research endeavours.

Sincerely,

Prof T Padayachee
Chairperson: Central Research Ethics Committee
Vaal University of Technology

Annexure E: Research Ethics Certificate



**Zertifikat
Certificat**

**Certificado
Certificate**

Promouvoir les plus hauts standards éthiques dans la protection des participants à la recherche biomédicale
Promoting the highest ethical standards in the protection of biomedical research participants

 **Certificat de formation - Training Certificate**
Ce document atteste que - this document certifies that
Amanda Khumalo
a complété avec succès - has successfully completed
Introduction to Research Ethics
du programme de formation TRREE en évaluation éthique de la recherche
of the TRREE training programme in research ethics evaluation

Release Date: 2021/05/24
CID : c6a1v7p1B

Professeur Dominique Sprumont
Coordinateur TRREE Coordinator

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Swiss Academy of Medical Sciences (SAMS/ASSM/SAMW) (www.samw.ch) - Commission for Research Partnerships with Developing Countries (www.kirpe.ch)

[REV : 20170310]

Annexure F: Lectures Interview Schedule

Interview schedule



Title

Indigenous knowledge in the ecotourism curriculum at selected universities of technology and implications for post-qualification practice by field guides.

DURBAN UNIVERSITY OF TECHNOLOGY DEPARTMENT OF ECOTOURISM

Researcher: Ms Amanda Z. Khumalo

Supervisor: Dr DC Hlengwa

The objectives of this particular study are to:

- To identify the place of the inclusion of indigenous knowledge and ecotourism curriculum and post-qualification practice using DUT and VUT as cases.
- To highlight the benefits of indigenous knowledge in the ecotourism curriculum and post-qualification practice using DUT and VUT as cases.
- To explore different approaches and modules to implement the infusion to enhance industry practice using the cases of DUT and VUT.
- To examine the limitations of indigenous knowledge and tactics to mitigate them.

INTERVIEW QUESTIONS-LECTURES

Place: via audio call

Time: To be confirmed by the participant

1. What is your understanding of the term "Ecotourism"?
2. What is your understanding of the term "Indigenous Knowledge"?
3. According to your knowledge and understanding, is there a need for Indigenous Knowledge in the Ecotourism curriculum and practice? YES/NO
4. Please may you kindly elaborate on your answer.
5. (if yes) What are the ways that you suggest Indigenous Knowledge can be incorporated in the Ecotourism curriculum? And what are the benefits of such knowledge?

Annexure G: Field Guides Interview Schedule

Interview schedule



Title

Indigenous knowledge in the ecotourism curriculum at selected universities of technology and implications for post-qualification practice by field guides.

DURBAN UNIVERSITY OF TECHNOLOGY DEPARTMENT OF ECOTOURISM

Researcher: Ms Amanda Z. Khumalo

Supervisor: Dr DC Hlengwa

The objectives of this particular study are to:

- To identify the place of the inclusion of indigenous knowledge and ecotourism curriculum and post-qualification practice using DUT and VUT as cases.
- To highlight the benefits of indigenous knowledge in the ecotourism curriculum and post-qualification practice using DUT and VUT as cases.
- To explore different approaches and modules to implement the infusion to enhance industry practice using the cases of DUT and VUT.
- To examine the limitations of indigenous knowledge and tactics to mitigate them.

INTERVIEW QUESTIONS- FIELD GUIDES

Place: via audio call

Time: To be confirmed by the participant

1. As a guide, in your experience and understanding what is your understanding of the term "Ecotourism"?
2. As a guide, in your experience and understanding what is your understanding of the term "Indigenous Knowledge"?
3. In your experience and understanding, is there a need to have indigenous knowledge? YES/NO.
4. Please may you kindly elaborate on your answer.
5. As a guide, do you feel there is a need for Indigenous knowledge to be taught whilst obtaining Field guiding qualifications (in class)? YES/NO
6. (If yes) What are the ways you would suggest can be used to incorporate indigenous knowledge in the ecotourism curriculum?

Annexure H: Student Questionnaire

QUESTIONNAIRE



Title

Indigenous knowledge in the ecotourism curriculum at selected universities of technology and implications for post-qualification practice by field guides.

DURBAN UNIVERSITY OF TECHNOLOGY DEPARTMENT OF ECOTOURISM

Researcher: Ms Amanda Z. Khumalo

Supervisor: Prof DC Hlengwa

The objectives of this particular study are to:

- To identify the place of the inclusion of indigenous knowledge and ecotourism curriculum and post-qualification practice using DUT and VUT as cases.
- To highlight the benefits of indigenous knowledge in the ecotourism curriculum and post-qualification practice using DUT and VUT as cases.
- To explore different approaches and modules to implement the infusion to enhance industry practice using the cases of DUT and VUT.
- To examine the limitations of indigenous knowledge and tactics to mitigate them.

INTERVIEW QUESTIONS-3rd year STUDENTS (After completion of WIL)

Place: Via Email

Time: To be confirmed

1. What is your understanding of the term "Ecotourism"?

2. What is your understanding of the term "Indigenous Knowledge"?

3. So far in your study, are you learning anything about Indigenous knowledge?

4. After your work integrated learning, would you say you gained any knowledge related to indigenous knowledge? YES/NO

5. If yes, please share a few things that you learnt.

5.1 If no, why do you think that is so

6. According to your knowledge and understanding, is there a need for Indigenous Knowledge in the Ecotourism curriculum and practice? YES/NO

7. Please may you kindly elaborate on your answer.

8. (if yes) What are the ways that you suggest Indigenous Knowledge can be incorporated in the Ecotourism curriculum? And what are the benefits of such knowledge?
