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INTEGRATING TRADITIONAL ECOLOGICAL KNOWLEDGE IN HERITAGE CONSERVATION PRACTICES: A STUDY OF INDIGENOUS CULTURAL LANDSCAPES AT KAMPUNG BATU 6, TAPAH, PERAK

Nur Raudhatul Athirah Nor Fauzi[1] & Suriati Binti Ahmad[2]*
***Corresponding**
Department of Built Environment Studies and Technology,
College of Built Environment
Universiti Teknologi Mara, Perak Branch,
Campus Seri Iskandar

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ABSTRACT

This proposal is developed within a framework of incorporation of Traditional Ecological Knowledge into heritage conservation practices pertaining to indigenous peoples' cultural landscapes such as in Kampung Batu 6, Tapah, Perak. Traditional Ecological Knowledge is, thus, an asset built over the years for the sustainable management of land and biodiversity that resonates with the people's way of life which in this case are the indigenous Orang Asli. This study will employ qualitative method. The methodology shall involve participant observation, semistructured interviews of 7 participants and environmental mapping to understand how Traditional Ecological Knowledge is practiced and maintained among members of the community. The time period in one week and the work supports the view that Traditional Ecological Knowledge practice is essential for safeguarding cultural heritage and biological diversity; as well as for strengthening the resilience of human-ecological landscapes. It is therefore expected that the findings from this study will draw responses on the need to incorporate Traditional Ecological Knowledge within legal frameworks to promote both biological and cultural heritage of Malaysia.

Keyword:*Traditional Ecological Knowledge,Heritage Conservation , Cultural and Spiritual Beliefs, Medicinal Plant*

INTRODUCTION

Traditional Ecological Knowledge in heritage conservation affords more wholesome ways of safeguarding the natural and cultural heritage, especially in indigenous cultural landscapes. Kampung Batu 6 in Tapah, Perak, is one major case study where Traditional Ecological Knowledge makes up the core of their interaction with the environment for the indigenous Orang Asli communities. These are landscapes formed through centuries of cultural and ecological practices that are rich in biodiversity, hence commanding deep cultural and spiritual significance.

Traditional Ecological Knowledge is the collective knowledge of Indigenous peoples of Indigenous communities with respect to management of local ecosystems, comprising traditional agriculture, medicine from plants, and sustainable hunting and fishing techniques by Anju & Kumar, (2024). The Orang Asli in Kampung Batu 6 have a strong connection with the land, which exemplifies their particular traditional knowledge of the regional flora, fauna, and water systems by Das et al., (2023). This knowledge has been passed down through generations to ensure the survival and balance of the local ecosystem.

In a bid to integrate Traditional Ecological Knowledge with modern heritage conservation practices, practitioners aim at safeguarding both ecological integrity and the continued cultural identity of indigenous peoples. This study, for example, contributes significantly toward landscape conservation with traditional ecological knowledge, through a focus on the resilient actions of locals against pressures of urbanization, deforestation, and climate change. This looks into the role of Traditional Ecological Knowledge in maintaining continuity with regards to traditional practices important in community well-being for their cultural survival by Gordon (Iñupiaq) et al., (2023).

Research in Kampung Batu 6 brings into view how indigenous communities, conservationists, and government agencies should work in collaboration to have Traditional Ecological Knowledge recognized, respected, and integrated into larger frameworks of nature conservation. The government is to pursue a comprehensive policy and program to recognize and incorporate TEK within national frameworks of sustainable development

and environmental management. The policy will also protect the intellectual property rights of indigenous and local communities for their cultural and ecological contributions. It will institute participatory governance wherein the active participation of such communities in decision-making processes regarding biodiversity, natural resource management, and heritage preservation becomes a norm. It will also cater for the equitable sharing of benefits emanating from the use of genetic resources and related traditional knowledge, consonant with the principles of the CBD, premised on mutual respect and putting into focus the aspect of sustainable development. (Traditional Knowledge in Policy and Practice, n.d.)

LITERATURE REVIEW

Cultural and Spiritual Beliefs

Traditional ecological knowledge concerns the cultural and spiritual basis for which indigenous people exercise their livelihoods through a sustainable management of the resources in their custody. In the northeast of Thailand, TEK among indigenous peoples is tied to spiritual beliefs on sacred areas within the Lower Songkhram River Basin, including Don Pu Ta wetlands. Such rituals, taboos, and zoning practices determine the survival of biodiversity from overexploitation of such a crucial ecosystem Chunhabunyatip et al., (2018). The Torres Strait Islander peoples' cosmology is known as the "Dreamtime," which aligns their spiritual heritage with stewardship of the land. In the Kimberley region, protecting the Wandjina gods is said to look after the environment: for example, most spiritual and ecological purposes are achieved when Wandjina images are painted anew. These exemplify how indigenous worldviews have embedded ecological conservation within cultural tradition (Blakeney, n.d.).

The incorporation of spiritual beliefs into modern conservation policies thus highlights their relevance for both ecosystem and cultural heritage conservation. An example includes the effort made in Thailand to consider local spiritual traditions so that sustainable use principles will shine through the final policy document Chunhabunyatip et al., (2018). In Australia, the Aboriginal spiritual connection to land has been reinforced by the Native

Title Act, although prevailing intellectual property laws generally do not adequately protect sacred images and sites. The Neowarra claim serves to remind everybody that Aboriginal cosmologies should form a basis for land management decision- making practices. Examples showed the necessity for a link between the traditional practices and contemporary ecological strategies, grounded on the partnership between local communities and conservation approaches for stewardship of resources, thus ensuring equitable and efficient governance of resources (Blakeney, n.d.).

Heritage Conservation

Heritage conservation in the framework of Traditional Ecological Knowledge is based on interconnectedness: cultural practices and ecological insights intertwined for the purpose of achieving sustainable development. The indigenous communities, custodians of both natural and cultural heritages, merge spiritual beliefs, rituals, and traditional mores into resource-management practices aimed at safeguarding biodiversity Chunhabunyatip et al., (2018). For instance, sacred ecological sites in the Songkhram River Basin of Thailand are protected through community rituals and taboos Chunhabunyatip et al., (2018). In Australia, for instance, the Aboriginal peoples' creation cosmology, "Dreamtime," links cultural heritage to stewardship of the land. Practices include repainting sacred Wandjina images to serve ecological continuity and spiritual continuity (Blakeney, n.d.). These divergent international frameworks, including conventions of UNESCO, the UN Declaration on the Rights of Indigenous Peoples, among others, typically encourage participatory approaches with a keen emphasis on the roles and importance of indigenous self-determining authorities in heritage management. However, in this environment of state-centric governance and commodification of cultural heritage, legal pluralism becomes a major challenge for honoring traditional laws. The delicate balance that needs to be lifted between the preservation of cultural values and-both eco-tourism opportunities underscore the need for collective governance in ensuring the longevity of cultural identities and ecological heritage (Demissie & Italemahu, 2024).

Natural Resource Management

Traditional Ecological Knowledge is a system that adapts itself to

the needs of the community in terms of the knowledge of an ecosystem, usually stemming from indigenous practices and traditions. Contrary to Western scientific approaches, which, in most cases, approach with an economic productivity approach, TEK takes up sustainability, biodiversity conservation, and harmony with nature as their main perspective. It is quite helpful during the management of natural resources, especially agriculture, water systems, and forest conservationDas et al., (2023). For instance, shifting cultivation in Northeast India, alder-based agroforestry in Nagaland, and paddy-cum-fish cultivation by the Apatani tribes of Arunachal Pradesh present some of the finest examples of sustainable land and water use by. The sacred forests of Meghalaya and Arunachal Pradesh further show the role of cultural beliefs and rituals in biodiversity protection. However, TEK has been severely threatened by rapid modernization with shortened fallow periods and poorly documented databases. By embarking on collaborative approaches, the gap between TEK and modern science will be bridged; hence, providing a promising route to sustainable management of resources as well as conserved cultural heritage and ecological balance(Gordon (Iñupiaq) et al., 2023) .

Medicinal Plants

Traditional Ecological Knowledge, or TEK, is the traditional knowledge, usually orally transmitted, that an indigenous community has about the natural world and its interaction with it, including medicinal plants. For instance, the Mullu Kuruman tribe of Wayanad, Kerala, possesses a rich repository of ethnobotanical knowledge, identifying 111 species used for food and medicine, of which 29 are medicinal Anju & Kumar, (2024). Such medicinal plants deal with different conditions-from wound healing, diabetes, to infection-with mainly sustainable harvesting rates. This knowledge interface of ecological perception and traditional practices helps communities, who continue to need good health through such interconnections underpin resilience from a changing climate. Most stressors document traditional knowledge that there exists dual goals for safekeeping indigenous cultures and biodiversity itself: supplying ways toward ecologically viable long-term management approaches to natural resource production in sustainable manners (Mahmood et al., 2013).

RESEARCH METHODOLOGY

Site Selection

Figure 1. Map of Kampung Batu 6, Tapah

These settlements in Perak are spread across many districts: Hulu Perak, Kuala Kangsar, Batang Padang, Kampar, Kinta, Lenggong, Muallim, Larut, Matang, and Selama. Examples of some of the bigger settlements include the villages of Kampung Air Banun, Kampung Sungai Kejar, Kampung Pos Gedong, Kampung Pos Dipang, Kampung Ulu Geruntum, and Kampung Pos Kuala Mu. Several of these villages within the Batang Padang district, especially in the area of Tapah, include Kampung Batu 6, Kampung Pos Gedong, and Kampung Batu 14. It is for this reason that the research location was chosen due to its highly populated concentration with members of the Orang Asli from the Semai tribe, having one strategic entry into various rural areas. Tapah also holds a lot of historical significance in terms of serving as a traditional interaction center for the Orang Asli and the external community, giving it relevance to studies on cultural heritage conservation and integration of traditional ecological knowledge into sustainable development.

Table 1. Settlement of Indigenous People in Perak

District	Tribes	Location
Hulu Perak	Jahai	Kampung Sungai Kejar Kampung Sungai Tiang Kampung Air Banun
	Temiar	Kampung Ong Jangking Kampung Rual
Kuala Kangsar	Temiar	Kampung Ulu Geroh Kampung Chinggung Kampung Ayer Kala
Batang Padang	Semai	Kampung Batu 6, Tapah Kampung Pos Gedong Kampung Pos Slim Kampung Sungai Bot Kampung Batu 14, Tapah
Kampar	Semai	Kampung Pos Dipang Kampung Ulu Kampar Kampung Pos Piah
Kinta	Semai	Kampung Ulu Geruntum Kampung Sungai Siput Kampung Makmur
Lenggong	Temiar	Kampung Beng Kampung Bukit Asu
Muallim	Semai	Kampung Pos Bersih Kampung Orang Asli Behrang Ulu
Larut, Matang, dan Selama	Temiar	Kampung Pos Kuala Mu Kampung Ulu Selama

The Kampung Batu 6, Tapah, Perak, study site is an Indigenous cultural landscape with rich traditional ecological knowledge. Kampung Batu 6 was selected as the study site because it meets the criteria of relevance to the research focus on TEK and heritage conservation practices, especially in Indigenous communities.

Qualitative Method

The research will use a qualitative method to investigate TEK through semi- structured interviews and site observations, and market, and traditional practices and indigenous knowledge through documenting the testimonies of elders, leaders, and holders of traditional knowledge Shull et al., (2008). The use of open-ended questions during such interviews can elicit a full

discussion and full understanding. Follow-up site observations will provide on-the-ground insights regarding sacred places, conservation areas, and rituals that will be documented with field notes, photographs, and maps to show the interconnectedness between culture and ecology. Thematic analysis will generate patterns and themes that will be queried against the existing literature to ensure reliability. In such a way, the ethical issues that will be mitigated during the research process include informed consent, confidentiality, and respect for cultural sensitivities to competently represent the indigenous perspective (Shull et al., 2008). This method clearly shows how TEKs are stories of cultural heritage interwoven with sustainable resource management.

DATA COLLECTION

In order to study the inclusion of Traditional Ecological Knowledge (TEK) in heritage conservation practices, this research was based on interviews and site observation. These particular methods were used to get a complete understanding of the Indigenous people's views about conservation and also to comprehend the function of Traditional Ecological Knowledge in the management of heritage.

Interview Method

The study employed a qualitative method approach which is an interview and site observation to intergrating Traditional Ecological Knowledge in heritage conservation practice in Kampung Batu 6, Tapah. An interviews was done to include around 7 members of communities such as Indigenous, school educators who teach indigenous pupils, and Head of village Kampung Batu 6, Tapah. The interviews cover open-ended issues related to the role of environmental leaders' TEK in management and also the difficulties/benefits of adapting these traditions to existing frameworks. The main point of the interviews was the participants of the villagers from 15-30 minutes and they were performed in a simple language so that they feel nonthreatened and allow them to grasp the concept easily Alshenqeeti, (2014).The research observed indigenous community traditional ecological knowledge on practices such as agricultural methods, resource management techniques, and rituals that have ties to environmental sustainability. Also,

research observed indigenous villages where heritage conservation practices were discussed or practiced in order to gather first-hand information about how the communities approach environmental conservation in Kampung Batu 6, Tapah Shull et al., (2008).

By using an Atlas.ti was employed to analyze data gathered from interviews and site observations in this study of Traditional Ecological Knowledge among Kampung Batu 6, Tapah. The documents of transcribed interviews and notes from observations were imported into the software where open coding was applied to recognize principal themes that included "ecological knowledge," "traditional knowledge," and "river management techniques." The initial codes were then grouped into broader categories, such as Cultural Resource Management and Ecological Adaptation Strategies . This catalyzed the emergence of themes such as TEK as a Cultural Heritage Practice and TEK as a Climate Change Adaptation Strategy Alshenqeeti, (2014). These were further supported using quantitative methods such as the Code Co-occurrence Analysis and Network Visualization provided by Atlas. ti, which displayed the interconnectedness of these practices, emphasizing the recurrent patterns from the prominent quotes and word clouds. The triangulation of interview and observational data ensured the validity of reported findings of the significant role TEK plays in allowing ecological balance while confronted with modernization and environmental changes Conservation (Alshenqeeti, 2014).

Site Observation

The research observed indigenous community traditional ecological knowledge on practices such as agricultural methods, resource management techniques, and rituals that have ties to environmental sustainability. Also, research observed indigenous villages where heritage conservation practices were discussed or practiced in order to gather first-hand information about how the communities approach environmental conservation in Kampung Batu 6, Tapah (Baker551, n.d.).

The observation checklist underscores the practice of Traditional Ecological Knowledge (TEK) in Kampung Batu 6, Tapah, through their natural resources management, cultural sustaining practices, and sustainable living. Together the population conserves rivers, forests, and biodiversity,

making use of the natural resources they contain, such as medicinal plants and control over hunting and practicing restrictions for preserving ecological equilibrium Das et al., (2023).

Traditional approaches such as bamboo structures and nipah leaf roofs are still widely used but modern methods are increasingly employed in construction works. Cultural activities, such as story telling, rituals and traditional activities like mat weaving, continue to be central but certain skills, e.g., pottery, have declined . Protection measures are supported by herb and fruit tree planting and by working with institutions, such as JAKOA, in order to promote a sustainable use of the resources Chunhabunyatip et al., (2018).

Governance led through traditional leaders focuses on the protection of heritage, yet modernism and land rights issues present various difficulties. In general, the incorporation of TEK represents a compromise to reconcile heritage conservation with both indigenous knowledge and adaptive processes aimed at coping with changing pressures.

DATA ANALYSIS AND FINDING

Cultural and Spiritual Beliefs

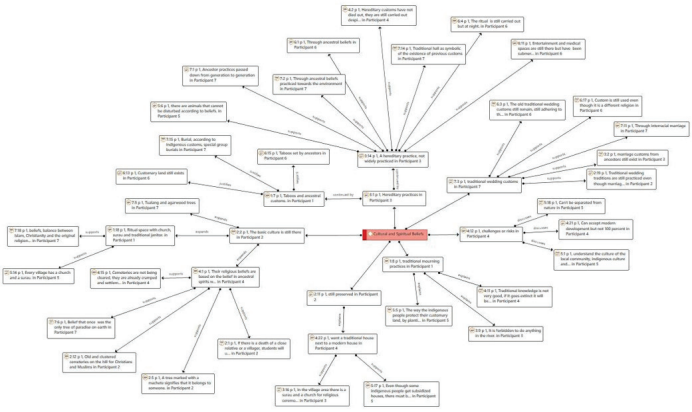

Figure 1. Data Analysis of Cultural and Spiritual Beliefs from Atlas.Ti

Based on figure 1, In Kampung Batu 6, Tapah, "Cultural and Spiritual Beliefs" were tapped to reveal the integrative nature of traditional practices and spiritual values in the life and identity of their community by merging indigenous customs, religious practices, and reverence to nature. Some of the wedding traditions, burial customs, and rituals are considered very important by members of this community even up to this day; thus, against the influence brought by modernization, these practices continue. This was further reiterated by Participant 6, spiritual beliefs combined in an Islam, Christianity, or Indigenous tradition with their sacred places comprised of churches, suraus, or ritual places, all reaffirming one spiritual environment that accommodates all.

Nature occupies a central spiritual place in the community, wherein spiritual trees help establish sacredness and taboo certain river activities-a far-reaching recognition of respect for nature. However, the loss of traditional knowledge, as emphasized by the discussion group member P4, is more salient in brewing concerns-in both cases-modernity-witnessing challenges. The community marches on in serried ranks, careful not to be submerged by inappropriate and excessive changes in the present day.

Heritage Conservation

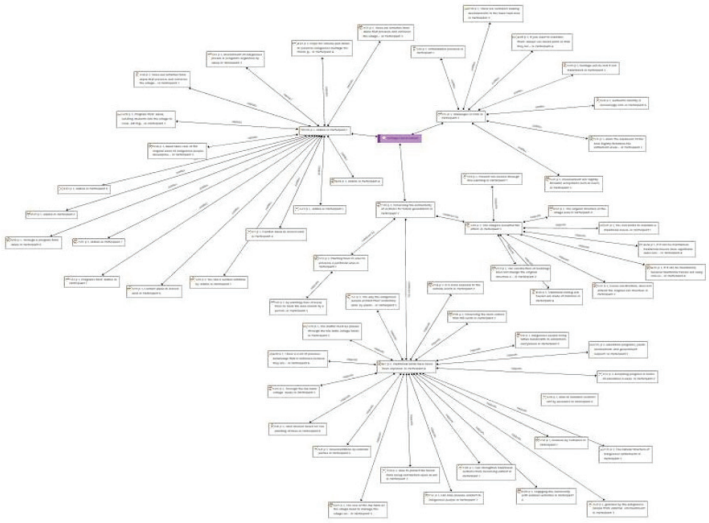

Figure 2. Data Analysis of heritage Conservation from Atlas.Ti

Based on mind map 2,the The conducted data analysis on heritage conservation on Kampung Batu 6, Tapah, reveals that participants have portrayed different views concerning the preservation of cultural and environmental heritage. For example, Participant 1 supported the need for ritual and traditional ceremonies leading to forming the bridge between the community and their ancestors, and Participant 2 agreed that these practices should be recorded and taught to the younger generations in order that they might be continued. The issue raised by Participant 3 was in relation to modernization, entailing that the traditional cultural practices could be overrun by modernity due to failure in active preservation.

For development of aesthetic in the cultural field, Participant 4 connected sacred trees and land to the home and communal identity. He also mentioned that the community should respect their collective participation in sacred sites via responsible land and resource management. Participant 5 noted the passing of interest for the young ones into traditional practices and detailed that intergenerational learning and knowledge sharing would be ideal; moreover, Participant 6 argued for heritage education within the ambit of formal educational institutions and informal learning spaces to create pride and stimulation through enduring knowledge observably.

Participant 7 pointed to the socio-economic problems to be addressed; as they say, economic constraints have often overshadowed heritage by embarking into cultural practices and natural resource management. Moreover, it was suggested that there is a need for integrating sustainable development models. Finally, Participant 8 sided gracefully with the community in resilience, noting that perhaps theirs is the inability to adapt while zealously keeping hold on tradition and society, thus showing their common will.

Medicinal Herbs

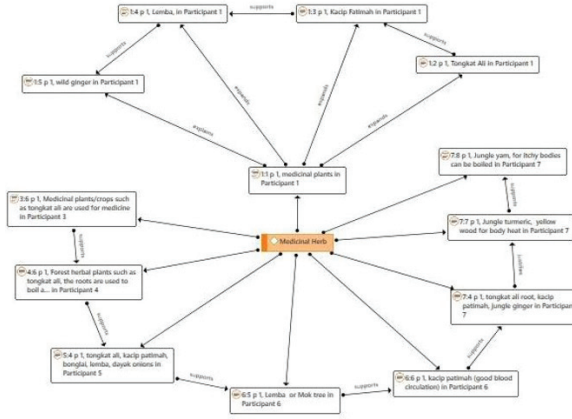

Figure 3.Data Analysis of Medicinal Herbs from Atlas.Ti

The figure 3, signifies the diversity of medicinal plants owned by the community of Kampung Batu 6, Tapah. Participant 1 states that he makes use of Tongkat Ali and Kacip Fatimah, Participant 3 and 4 also use Tongkat Ali but specifically its roots. Participant 6 uses Kacip Fatimah, valuing it specifically for its blood circulation effects. Finally, Participant 7, as an herb enthusiast, shows a rather large range of herbs, such as Jungle Yam, Jungle Turmeric, Tongkat Ali, Kacip Fatimah, and Jungle Ginger.

Resourse Management Practice

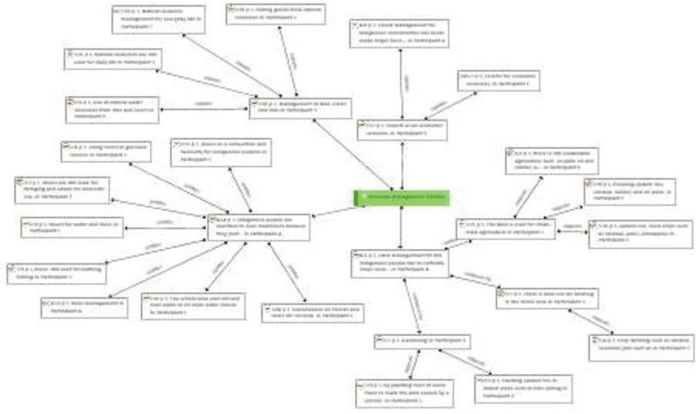

Figure 4.Data Analysis of Resourse Management Practice from Atlas.Ti

The figure 4 reveals differences in resource management by the participants in Kampung Batu 6 of Tapah. Participant 1 emphasizes on water conservation, Participant 2 on waste reduction, Participant 3 takes a holistic view with this being water, waste, and land management they integrate. Participant 4 addresses sustainable land use; Participant 5 is into energy savings. Likewise, Participant 6 may be engaged in community-theory initiatives and Participant 7 with practices which may be traditional knowledge-based

Seasonal Cycle

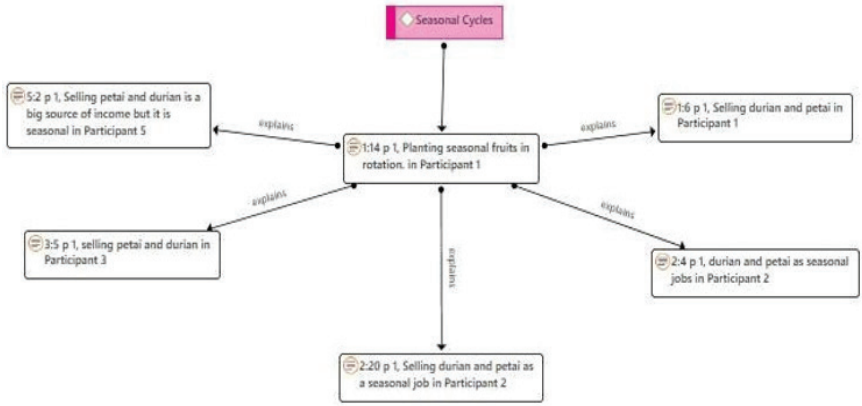

Figure 5.Data Analysis of Seasonal Cycle from Atlas.Ti

The Figure 5 shows that seasonal cycles are an influence on the economic activities pursued by Kampung Batu 6, Tapah residents. Participant 1 put emphasis on the seasonal cultivation of fruits such as durian and petai, after which they integrated this in crop rotation of seasons. Participant 2 and participant 3 thought of durian and petai a seasonal source of income; instead, this provided them with a very good source of economic opportunities through proceeds that emanate from it. Participant 5 recognizes the seasonality of durian and petai sales, and says that these are a very good source of income but with seasonal shifts.

Traditional Skills

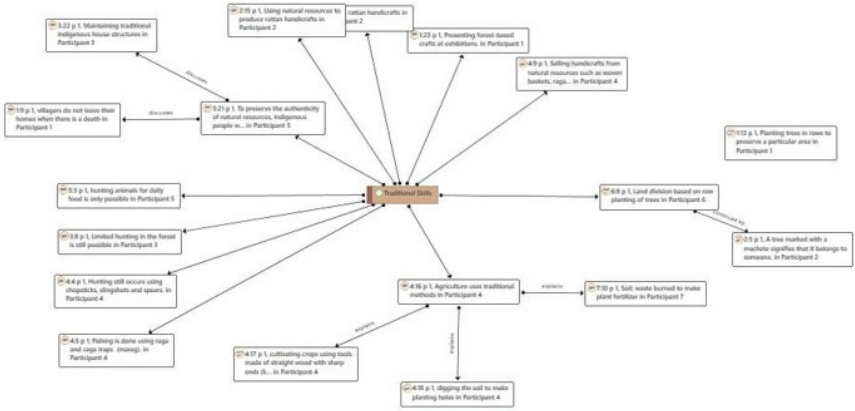

Figure 6.Data Analysis of Traditional Skills from Atlas.Ti

The figure 5 illustrates a wide spectrum of indigenous skills that the people of Kampung Batu 6 in Tapah exercise. Participant 1 closely relates to native culture, with support for structures of houses, and participating in exhibits involving handicrafts about forests. Participant 2 produces rattan handicrafts with naturally available material and divides land based on customary modes. Participant 3 continued traditional hunting activities although little as Participant 4 indicated traditional agriculture practices using traditional tools and methods such as crops cultivation with a sharpened piece of wood that has been prepared and soil waste used as fertiliser. Participant 5 reflects the integrity of the indigenous peoples as well as natural resources. Participant 6 demonstrated an excellent understanding of traditional land management practices, such as row planting and marking trees to divide up the land. Finally, Participant 7 identifies the role that traditional knowledge plays in sustaining livelihoods.

DISCUSSION

Traditional Ecological Knowledge (TEK) is a complex combination of cultural, spiritual, and ecological principles that guide Indigenous communities in sustainable resource management and heritage conservation. Often rooted in spiritual beliefs, TEK frequently combines biodiversity conservation with sacred rituals and taboos; for instance, safeguards

against sacred sites in Thailand's Songkhram River Basin or the practices of repainting Wandjina images in Australia in order to ensure ecological continuity. Such examples bring out how the cosmologies of the indigenous people bind ecological stewardship into the traditions' cultural cloth. TEK also promotes sustainability in activities like agroforestry and the sacred forest conserved by Indian tribes, for instance, Apatani tribes. Ethnobotanical knowledge, among other kinds of knowledge by tribes of Kerala, is a proper example of the application of TEK concerning knowledge of such plants and protecting biodiversity. Notwithstanding this value, TEK, nonetheless, continues to be a flashpoint in the philosophical contestations between modernization, legal pluralism, and poor integration within current governance systems. Yet, collaborative strategies that involve connecting TEK to modern science, at this stage, would provide the hope of fair resource management and sustainable development through active methods in the safeguarding of both the cultural identity of people and ecological sustainability.

CONCLUSION

This research highlights the great importance attached to the inclusion of Traditional Ecological Knowledge (TEK) in the heritage conservation practices and specially the processes occurring in Indigenous cultural landscapes of Kampung Batu 6, Tapah, Perak. Results show that TEK, embedded in the cultural and ecological knowledge of the community, is a valuable base for sustainable landscape management and heritage protection. Across biodiversity conservation, resource management, oral traditions and adaptive behaviour in response to environmental upheaval, TEK reveals an integrative system, in which human intervention is balanced with natural processes.

Through the recording and examination of these practices, the paper underscores the central role of Indigenous knowledge in addressing modern issues including environmental pollution and climate change. In addition, the inclusion of TEK in conservation models guarantees safeguarding of both material and immaterial cultural heritage and facilitates resilience and continuity in Indigenous communities.

Nonetheless, the paper also points out important issues such as, the depletion of TEK as a result of modernization, and lack of participation of Indigenous voices in formal conservation legislations. The task is to be met through interdisciplinary collaboration between Indigenous peoples, policy makers and conservation professionals to prevent TEK from being lost but also to be used creatively as a robust resource throughout heritage conservation.

In Conclusion, integration to the heritage conservation activities at Kampung Batu 6, practices provides a solution for sustainable, cultural, and ecological care. It highlights the necessity for valuing and sharing Indigenous knowledge systems as a way to protect cultural heritage and environmental survival in the interests of posterity.

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